THE AMERICAN GAS LIGHT JOURNAL

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION, HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE.

VOLUME LXXXIX., No. 4. Whole No. 1,729. | NEW YORK, MONDAY, JULY 27, 1908. | $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, } Editors.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

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[OFFICIAL NOTICE.]

Wrinkle Department, American Gas Institute.

To the Members of the American Gas Institute: All members of the Institute are earnestly requested to send in as soon as possible contributions for this year's Wrinkle Department report. The success of the Department depends entirely on the co-operation and assistance of the members.

Mail all contributions to Milan R. Bump, Editor, No. 60 Wall street, New York city.

BRIEFLY TOLD.

SECOND ANNUAL CONVENTION, ILLUMINATING ENGINEERING SOCIETY.—Mr. George Ross Green, Chairman of the Convention Committee of the Illuminating Engineering Society, is out early with the first pronouncement respecting its second annual session. From it we learn that the sessions are to be held on the 5th and 6th days of October, in Philadelphia. The Hotel Walton is to serve for both headquarters and convention place, an arrangement that cannot fail of being effective and convenient. The tentative list of papers—in fact, it is more than tentative, since titles and names of authors are listed—so far recorded numbers 17, including the address of the President, Dr. Louis Bell, which listing would seem at least ample for the provision of matter for holding the attention of the delegates, especially if any measure of discussion is to be held on each, and remembering that the assembly is for 2 days only. Several of these, if one may judge by their titles, are to be eminently practical, and at least three of them will appeal directly to the gas fraternity. For instance, Dr. E. P. Hyde, of Washington, who will be remembered from his clever talk last Fall before the American Gas Institute, on a kindred subject, is down for a paper on "International Unit of Light." Mr. T. J. Litle, Jr., is to write on "Modern Gas Lighting Conveniences," and Mr. H. Thurston Owens, who is well known to our readers from his contributions to our columns, will discuss the subject of "Street Lighting Fixtures: Gas and Electric." Another paper that is sure to attract the attention of gas men is the one promised by that thorough master of his art—Dr. A. H. Elliott—on the "Illuminating Value of Kerosene Oil." Still another which will hold the attention of the gas engineer is that promised by Dr. F. E. Cady, of Washington, D. C., on "The Relation between Candle Power, Voltage and Watts of Different Types of Incandescent Lamps." The complete list is indeed replete with promise. The fact that the Committee had well in mind the scant time in two meeting days for the proper handling of such a mass of matter, however, is vividly shown in the plan evolved. The Committee proposes to send to each member who, by means of the return postal card system, indicates his positive intention to be present, advance copies of the papers. At the regular session the papers will be read in abstract, possibly only by title, wherefore the time will be devoted altogether to discussions. Of course, it is too early now to indicate with precision the shape and scope of the entertainment that will be provided; but in such a city as Philadelphia there can be no dearth in such respect. Chairman Green, and wisely too, makes the altogether practical suggestion that, remembering the week commencing October 5th is Founders Week in Philadelphia, it will be well to secure hotel accommodations in advance.

AN IMPORTANT BULLETIN.—Through the consent of the Director of the United States Geological Survey we are enabled to say that a forthcoming "Bulletin" of the United States Geological Survey will contain an exhaustive report of the tests conducted at the fuel testing plant in St. Louis, Mo., and Norfolk, Va., on the gas producer, an interesting feature of which will be the noting of the behavior of a certain bone coal from West Virginia in the producer. This fuel was considered of little or no value for steam boiler work, yet showed considerable usefulness in the gas producer, developing at the engine a brake horse power per hour for 1.65 pounds of coal. This coal was delivered on the producer platform in lump form up to 8 or 10 inches in size. The coal crusher not being available at the time necessitated breaking the large lumps with a hammer. The character of the fuel was rather peculiar. Some of the lumps consisted almost entirely of what appeared to be a high grade bituminous coal, others seemed to be nothing more or less than rock, heavy and hard, and when hit in the dark with a hammer numerous sparks could be readily seen. And again, there were many lumps of this rocklike substance to

LIBRARY OF CONGRESS. JUL 27 1908 SMITHSONIAN DEPOSIT.

which adhered much good coal. In the producer all of these lumps, when not too large, would burn entirely through. The fuel had no tendency to clinker or coke and worked exceedingly well, needing scarcely any poking. It contained a very high percentage of ash (about 45), thus causing the ash bed to increase in thickness very rapidly, and throughout the test this fact was not properly appreciated; consequently very much of the time during the test the ash bed was too high for the best results. The fact that the coal had to be broken by hand, and that it was unusually hard and rocklike, had a tendency to allow lumps of coal much too large to be charged into the producer. These large lumps, very high in ash, did not burn entirely through; as soon as the burning was well started, a layer of ash formed around the lump, interfering with the combustion of the remaining portion, and before it had time to burn it had passed out with the ashes unconsumed. Because of the general appearance of the coal but little was expected of it, and the test was started with only a partial load. After several hours' run, however, the results warranted full load on the engine. After 39 hours of full load the accumulation of ash in the producer caused a little trouble; the gas went down in heat value and it was necessary to reduce the load to about 9 per cent. of full load. After much grinding down of the ash bed and special care in breaking up the lumpy coal, the gas began to increase in heat value, and at the end of the test the producer was again in shape to maintain full load at the engine. The calculations for the test are based on the 50 hours taken from the time full load was carried by the engine, and for this period the gas averaged 144 B. T. U. per cubic foot, with an average load of 97 per cent. of full load. The following is the result of the test on the West Virginia bone coal:

Proximate Analysis of the Coal.	Per Cent.
Moisture	0.47
Volatile matter	8.83
Fixed carbon	46.96
Ash	43.74
	100.00
Sulphur	0.27

Composition of Gas by Volume.	Per Cent.
Carbon dioxide (CO_2)	9.7
Carbon monoxide (CO)	19.5
Hydrogen (H_2)	16.6
Methane (CH_4)	1.6
Nitrogen (N_2)	52.6
	100.00

Duration of test, 50 hours; coal consumed in producer, as fired, pounds per hour, 378; B.T.U. of coal as fired, 8,566; standard gas per pound of coal consumed in producer, cubic feet, 44.1; efficiency of conversion and cleaning gas, 74.1; brake horse power developed at engine, 228.8; coal per brake horse power hour developed at engine, pounds, 1.65. The brake horse power developed at engine was based on an assumed efficiency of 85 per cent. for generator and belt.

CURRENT MENTION.—

MR. R. K. COWARD has been elected Manager and Purchasing Agent of the Federal Gas Company, of Boulder, Col., vice Mr. F. W. Leland, resigned. He heartily invites any gas man who travels that way to call on him.

JOHN S. BIOREN, President of the Cape May (N.J.) Gas Company, is rejoicing over the fact that its output for last month shows a gain of 20 per cent. over the corresponding month of 1907.

THE Southern Gas Association is to be a regularly incorporated body, Messrs. T. D. Miller, R. C. Congdon and James Ferrier having made application for the necessary papers. Atlanta, Ga., has been selected as permanent headquarters.

THE Baltimore Consolidated Gas, Electric Light and Power Company has arannged a new rate schedule for supplying electric currents. The main features are a charge of 10 cents a kilowatt hour for the first 100 hours and 5 cents for each kilowatt in excess of that number each month; a minimum use of $1 per month is exacted on lighting account and of $2 on power account. A system of discounts ranging from between ½ cent to 2 cents per kilowatt hour, according to monthly consumption, is also operative.

A CORRESPONDENT in Richmond, Va., informs us of the sudden death on the 4th inst., at his home in Charleston, S. C., of Mr. Pinckney J. Balaguer, Secretary and Auditor of the Charleston Gas, Railway and Electric Company. Deceased was in his 38th year, having been born in Charleston, October 22d, 1870.

THERE are 500 tungsten incandescent lamps used for street lighting in the Jamaica district of Queensboro, Long Island. It is said that it requires 3 tungstens to effectively replace 1 of the arc electric lamps heretofore used in that district, while a similarly effective replacement by mantle gas arcs requires only 2 lamps.

NOTICES have been issued by the New Haven (Conn.) Gas Light Company for a special meeting, to be held to-morrow, the session to be held for the purpose of debating a proposal to make an issue of additional stock.

[CONTINUED FROM PAGE 101.]

FOURTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

HELD AT OMAHA, NEB., JUNE 17, 18 AND 19, 1908.

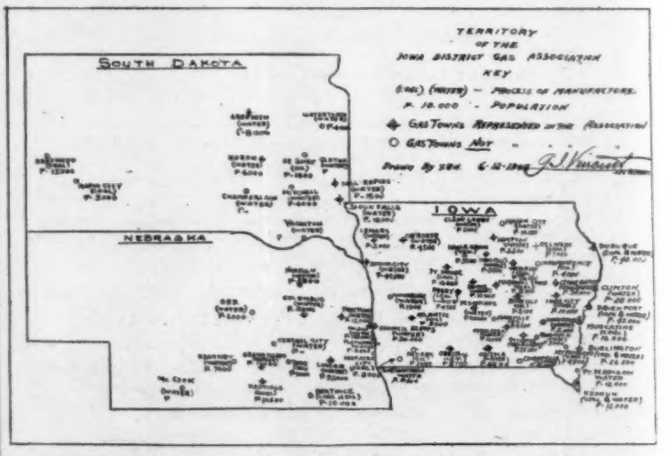
FIRST DAY—MORNING SESSION.

ANNUAL REPORTS, SECRETARY AND TREASURER,

The Secretary and Treasurer read his annual reports as follows:

In accordance with instruction at the last annual meeting, the Secretary sent a donation of $25 to the Practical Class of the American Gas Institute, which was very cordially acknowledged by the Secretary. Personal letters were written to all the unaffiliated gas companies of the three States, and circular letters to all the gasoline and acetylene companies. Very small returns were received and the Secretary would be very grateful for any suggestions as to methods of interesting these companies, particularly the gas companies. The Secretary has been materially assisted in his work in interesting gas companies by the Chairman of the Committee on Arrangements, Mr. Geo. H. Waring.

On Saturday, June 13, the map attached herewith was sent to all



the unaffiliated companies, with a cordial invitation to come to the meeting. During the year a copy of the "Proceedings" of the American Gas Institute was received from the Secretary of the Institute. Also a copy of the 1908 "Question Box" of the Southwestern Electrical and Gas Association, from Mr. Samuel Kahn, the Editor. The "Proceedings" need no comment, as we are all familiar with this valuable work. The "Question Box" is full of good things well worth reading. The two books, it is hoped, form the beginning of the Association Library. Personal letters were written to the President and Secretary of all the Gas Associations, extending a cordial invitation to be present at the meeting.

During the year 31 applications for membership were received, and 6 resignations. The total membership of the Association is now: Active, 67; associate, 40.

As Treasurer, I submit the following:

Receipts.

Cash on hand, June 12, 1907	$117.36	
Initiation fees	111.00	
1905 Dues	18.00	
1906 Dues	33.00	
1907 Dues	177.00	
1908 Dues	18.00	$474.36

Expenditures.

June 15, 1907,	Postage	$5.00	
" 25, "	American Gas Institute	25.00	
July 1, "	L. Nash, reporting convention	58.60	
" 10, "	N. Jay, typewriting	21.42	
Aug. 19, "	Kenyon Printing Co., stationery	2.25	
July 25, "	G. M. Averill, 1907 meeting	9.60	
Jan. 28, 1908,	Kenyon Printing Co., stationery	1.75	
" " "	Rubber stamp	.25	
" " "	Teleg. and Teleph. to Waring	1.20	
" " "	Postage	5.00	
Apr. 8, "	Kenyon Ptg. Co., letter heads	4.00	
May 13, "	Photo of Mr. Haines	.50	
" " "	Koch Ptg. Co., announcements	2.75	
" 28, "	Stamps	5.00	

June 12, 1907, Baker-T. Co., record book.....	$.95	
" " " Western Union, Telegram "Progressive Age"..... ..	.50	
" " " Koch Printing Company.	4.75	
Total expenditures.....	$148.62	
Cash on hand as per check book.....	325.74	$474.36

Upon motion the report was approved as read.

The Finance Committee reported, by Campbell Fair, Chairman, that they had examined the report of receipts and disbursements, together with all checks and vouchers, and found same to be correct. [Accepted.]

REPORT OF COMMITTEE ON STANDARDIZATION OF FITTINGS.

The President—We will now have the report of the Committee on Standardizing Fittings, Mr. G. I. Vincent, Chairman.

Mr. Vincent—At the last meeting of the Association a committee was appointed to consider the standardizing of house pipe fittings and other fittings' work. After some correspondence between the members of that committee it was decided that, inasmuch as this was special, and in some respects original work, it would be better not to proceed with it until the matter had been taken up with the Institute; and as the proposed affiliation came up at that time, the matter was laid on the table for the present.

Upon motion of Mr. Waring, seconded by Mr. Clabaugh, the committee was discharged with thanks.

Mr. Waring moved that the Association appropriate, and that the Treasurer be authorized to pay to the Educational Fund of the American Gas Institute, the sum of $25. [Seconded and adopted.]

Mr. Honeywell moved that the Secretary be instructed to correspond with the Trustees of the Educational Fund of the American Gas Institute with a view to having the indorsements of the Active Members of the Iowa District Gas Association, on applications for membership in the Practical Class, accepted by said Trustees. [Seconded and adopted.]

The Secretary read various letters from officers of the American Gas Institute, from the Southwestern Gas Association, the Canadian Gas Association, the National Commercial Gas Association, the Michigan Gas Association and the Pacific Coast Gas Association, all embodying invitation to the members of the Iowa to attend forthcoming meetings.

The President—We are all glad to hear these letters. I think it would be well for us all to attend these meetings.

A TELEGRAM.

Mr. Clabaugh—I have a telegram from one whom you all know well. We are sorry he is not here, and it is deplorable, too, because we have always thought he was well fixed with more than one change of linen. He says: "Detained by high water; washout on the line. Could have taken care of it in time if we had known.—GEO. ROPER."

The President—The next order of business is the discussion of the place of next meeting. I would like to have any suggestions from the members in regard to your pleasure in this matter.

The Secretary—I have some communications in regard to the subject from Mr. Maynard, Secretary of the Citizens Gas and Electric Company, of Waterloo, and Mr. Botsford, Secretary of the Des Moines Commercial Club. The Secretary then read letters of invitation from Mr. Maynard and Mr. Botsford, extending the hospitality of Waterloo and Des Moines, respectively, for the next annual meeting of the Association.

The President—I think the purpose of this order of business is for the Association to indicate its pleasure in the matter, and the Council at its meeting in January takes the action of this Association as an indication of the desires of the members and selects the place of meeting in accordance with that desire. There are a great many places where the Association would like to meet, and it is considered better to leave it finally to the Council to decide the question; but I should like to hear if any of the members present have any preference in the matter, so that the Council may be guided by their suggestions.

Mr. Maynard—Gentlemen, I want to apologize for any seeming ignorance as to the provisions of your Constitution; at the same time I want to emphasize the justice of their determining the selection, as our President has just said. Waterloo is anxious to entertain this Association. Waterloo is not the largest city in this jurisdiction, nor the most centrally located, but if those matters governed the location of our meetings, we would be at the same place for a long time. I take it that there are other matters that would be considered, namely, the interesting of the different localities throughout the entire three States in the organization and acquainting the people of the different stations that we have such an organization. I have been asked since I have been here where Waterloo is.

Mr. Averill—Tell them it is close to Cedar Rapids.

Mr. Maynard—What we want to do, instead of telling you where it is, is to show you. We can do that better than we can tell you. I want this Association to understand that in extending this invitation we feel that we have as much at stake in the successful pulling off of this convention as you can possibly have. The interests of your convention would be as well served in one town as another; the papers would be as technically prepared and as ably discussed; still we feel that there are other things that the Association should consider in connection with the meeting, and we are not afraid (I don't say it boastfully) but what we will send you away from Waterloo glad, every one of you, that you have learned where Waterloo is, and we will so impress it on your minds and on your bodies that you won't forget it.

Mr. Clabaugh—I never went back on my colors, and I think it is very important in the life of every man that he should meet his Waterloo as early in life as possible. Therefore, I think it wise that we should all go there, as we are all young men now. If we put it off for a few years more there is no telling what may become of us after meeting there. This gentleman just said we would all be glad to leave Waterloo. I don't believe that. I believe we would like to stay in Waterloo if we could; but I want to emphasize the importance of starting out in life early to meet your Waterloo, so I am for Waterloo.

Mr. Crawford—When I came here to-day I thought possibly there might be a possibility of getting the convention to Clinton, but as soon as I stepped inside the door I was surrounded and had this Waterloo badge pinned on me. But I desire to state that if there is any question as to where it should go, if it doesn't go to Waterloo, we would like it to come to Clinton. Last year we entertained the Iowa Electrical Association in pretty good shape, and we would only be too glad to entertain the Iowa Gas Association. If we can't get them next year, we would like to have them the year after that.

The Secretary—I would like very much to correct on the floor the impression I evidently gave Mr. Maynard about the Council selecting the next meeting place. The precedent has been established that it shall be brought up for open discussion on the floor of the convention, and the Council is practically instructed by the action of the Association. I, therefore, move, Mr. President, it is the sense of the Association that the next meeting of the Iowa District Gas Association be held in Waterloo in 1909. [Seconded and adopted.]

Mr. Maynard—I want to thank the gentlemen for this expression, and I want to correct one impression that may have gotten out from what Mr. Clabaugh said. While Waterloo is associated with a great defeat, if you could consult the shade of the Duke of Wellington to-day he would tell you that it is the greatest thing that ever happened.

The President—The next order of business is the Presidential Address. I will ask the Vice-President to take the Chair. [Vice-President Averill assumed the Chair.]

[For the text of the Address, see JOURNAL, June 29, 1908, p. 1107.]

Upon motion of Mr. Vincent the President's Address was referred to a committee of three, and the Vice-President appointed as such committee Messrs. Kellogg, McLean and Crawford.

The Secretary read the communication received on the matter of

AFFILIATION WITH THE AMERICAN GAS INSTITUTE.

At the charter meeting of the American Gas Institute a committee from the Iowa District Gas Association presented the following communication to the Institute:

October 18th, 1906.

To the American Gas Institute - Gentlemen: The Iowa District Gas Association desires to become affiliated with the American Gas Institute, as provided in Article 49 of the Constitution, and formal application is hereby made.

L. L. KELLOGG,
JANSEN HAINES,
GEO. MCLEAN,
E. G. PRATT,
} Committee.

The matter was not acted upon by the Directors, and was again brought informally to the attention of the Institute at the meeting in Washington in 1907.

At the Council meeting of the Iowa District Gas Association, held in February, 1908, the Secretary was instructed to take up the matter with the Institute and a communication was received from Dr. A. C. Humphreys, inclosing a copy of Sections 23 and 25 of the Constitution of the Institute and a form of agreement of affiliation.

In acknowledging receipt of this, your Seceetary advised that, as

the next annual meeting was in June, the matter would be held until then and formally ratified by the Association and the agreement executed by the officers. The affiliation agreement is attached hereto. The only further action, therefore, is an adoption by the Association of the affiliation, the execution of agreement by the officers, and the appointment of an affiliation representative as a member of the Board of Directors of the Institute.

The Secretary then read the agreement, extracts from the Constitution of the Institute and correspondence with the President of the Institute.

AFFILIATED.

The President—Gentlemen, I think this a very important thing. While it required the reading of some rather dry agreements to us, it should have your careful consideration.

Upon motion of Mr. Waring, the report was approved and the President and Secretary authorized to execute the agreement.

Mr. Honeywell moved that a committee of three be appointed to nominate a candidate for a Director in the American Gas Institute. [Seconded and carried.]

The President—I will appoint that committee later.

The Secretary—I don't think this matter is quite clear. I understand that this agreement has now been executed by the officers of this Association, and by Mr. Waring's motion we present it to the Institute. As it has not been accepted by the Institute, and may not be (assuming such a contingency, which I don't think will occur), why do we elect a delegate?

Mr. Honeywell—We don't elect a delegate. We select a candidate to be ratified by them after they accept the agreement. I think the matter is one that should receive considerable consideration.

The President—I think the idea of selecting a delegate, contingent on the Institute accepting this agreement, a good one. If we don't do that now, it puts any further action on the matter off until the next meeting of the convention. That delegate cannot be selected by the Council. I think that motion should be made in the form that the delegate be selected and recommended to the Institute for approval in the event that the American Gas Institute execute their side of the agreement.

The Secretary—I would like to amend Mr. Honeywell's motion to read that a committee be appointed to suggest a candidate for election as delegate to the American Gas Institute, the election to be contingent upon the acceptance of the affiliation by the Institute. [Seconded and carried.]

COMMITTEE ON RESOLUTIONS.

The President appointed as a Committee on Resolutions Messrs. Homer Honeywell, Chairman; A. W. Borden and L. L. Kellogg, of Sioux City.

REPORT OF NOMINATING COMMITTEE.

Mr. C. W. Fair, Chairman of the Nominating Committee, presented the following report:

Your Nominating Committee respectfully presents the following nominees for officers for the ensuing year.

President—A. T. Averill.
First Vice-President—Geo. H. Waring.
Second Vice-President.—Austin Burt.
Secretary and Treasurer—G. I. Vincent.
Members of Council (to serve 2 years)—G. W. Clabaugh, Thos. Crawford and E. G. Pratt.

Upon motion of Mr. Honeywell the report of the Committee was accepted.

ELECTION OF OFFICERS.

On motion of Mr. Kellogg the rules were suspended and the Secretary was ordered to cast the unanimous ballot of the Association for the officers named.

The Secretary cast the ballot as instructed, and the President announced the election of the officers and members of the Council as recommended by the Committee.

At the suggestion of the Secretary, he was authorized by the President to send a telegram to Mr. Austin Burt announcing his election as Second Vice-President.

In response to calls, Mr. Waring said: This is so unexpected, as Mr. Bryan says, that I don't know just exactly how to respond; but I wish to thank the Association, and will do my best to further its interests as First Vice-President. Mr. Crawford responded briefly, as also did Mr. Clabaugh.

Mr. Mettler—The Secretary in his report asked for suggestions regarding interesting representatives of gas companies that are not now members of the Association. I would like to offer the suggestion that he furnish the different supply men who are members of this Association with blank applications, accompanied by a letter suggesting that when they go to these towns they insist upon these managers becoming members.

The President—I am very much obliged to you for that suggestion, Mr. Mettler, and would suggest that you take it up with the Secretary and co-operate with him in regard to getting these other towns in. Having about 30 minutes before noon I think it very advisable to go on with the papers. "The Delinquent Account," by Mr. A. W. Borden, of Hastings, Neb., is in order.

Mr. Borden—With the permission of the chair, I believe that just a word of explanation would not be out of place in regard to what is to follow. This paper was prepared from the view point of a small plant manager, and you will please bear that in mind as the paper is read.

THE DELINQUENT ACCOUNT.

[For the text of the Borden paper, see JOURNAL, *ante*, p. 52.]

Discussion.

The President—Mr. Borden brought out a great many very excellent ideas in his paper, and I would like to hear it discussed. I will ask Mr. Clabaugh to give some of the Omaha practices on this question.

Mr. Clabaugh—There are some very valuable things in this paper. One thing, however, that I have in mind at present that I do not approve of (and I hope no one else will) is the sending out of a larger bill than the correct amount. That is a very grave mistake, whether in the gas business or anything else. The only way to do business is the right and honest way. It is true that you can get men in by sending them an erroneous account, but the explanation would not be satisfactory to them. I think most business men would see through it; but, whether they do or not, the gas business (or any other as I said before) is of too important a nature to do anything that is not absolutely straight. As to sending out any number of delinquent notices, I think a great deal of time is taken up in such things. If you have a discount day, the 10th or 15th, as the case may be, by the time your collectors have been out after the usual notices have been sent out, the 20th has elapsed, and it will be the last of the month before you can begin sending out these follow-up letters, as you must wait a day or two on each one of them. The complaint of the delinquents is not the complaint that bothers me. We find a great many people who come in after the 10th of the month—our discount day here—to make complaint of the size of their bills. They had no idea of complaining at the beginning of the month, but as the 10th rolled around they had no money to pay it. And so the complaint that comes in after the 10th of the month, while it should have received due consideration, is not as important to me as the complaint of the man who comes in the office immediately upon receipt of his bill. That gives you time to look into the matter and see whether the bill is correct or not. There have been so many ways devised for the collection of accounts that, as the gentleman said, it is almost an utter impossibility to have any regular rule. I think almost every community has to be handled individually. As it was said once that the tariff is a local issue, I think this is a local issue, and we must handle our people as we know them. I think the manager on the ground knows better how to collect and whom to push in collecting his bills than anyone else. Then, too, I think we can go a little too far in our collections. I would rather sell a man gas for a year and lose the last month's bill than never to have sold him at all. We do not take risks enough. We look on those who do not pay their bills as dead beats; it is not true. Many people cannot pay their bills because of adversity—failure in business, loss of position, and a hundred other things that to not savor of a deadbeat in any way. For those reasons I think we might better hold that they are perfectly willing to, and will eventually, pay their bills. In the selling of gas appliances, when those well-known, so-called deadbeats have come in and couldn't pay anything down on a stove, and were sent to me to learn whether I could give them time, I handle each each individually and separately. I told them I knew they were hard up, that we all got that way, but that I believed they would pay the bill. And I can truthfully say that I do not know of a single bill of that kind that we ever lost. Maybe they are trying to get into us a little more; but when a fellow gets down on his luck and is pushed down the hill, he becomes hardened; then when the right hand of fellowship is handed out to him by some man, he says: "I will not beat that man."

There is always a spark of righteousness, justice and truth left, no matter how low a man gets, and it is our duty as managers to get at that spark, to rekindle it, and bring out the best there is in our customer. We, of course, have a certain class who will not pay anyone if they can help it. They change their names sometimes. They come in as John Jones, run up a bill and don't pay it. John Smith comes in, a brother-in-law of the same man, living in the same house. Sometimes before we find out it is the same party who made the change. Then we have to take the meter out, and so it goes on in that way and we lose the bills. But suppose we do? Does any mercantile business get along without losing something? What business loses as little as the lighting business, gas or electric? I don't know of any. Shouldn't we take certain risks? A merchant goes into a wholesale grocery house here and buys a bill of $500 to $600, yet he is known to only have a capitalization of $2,000 or $3,000. I tell you, gentlemen, we are too strict. We drive people away from our service counters because we want a deposit. We want a guarantee, and we want the history of these people from the time they were born to the present time before we will give them a foot of God's pure air, as Judge Scott here once said. Just the other day a collector came in with the report that 5 houses in a row wouldn't pay their bills. They were occupied by five railroad men who had been let out on account of hard times. Do you believe we should shut those meters off because those fellows are not paying their bills now? Suppose they do get into us for $8 or $10 apiece; they will pay their bills in time, and they will be more apt to be good consumers in the future and good solicitors for us, because the man who is satisfied with his dealing is the best solicitor you can employ. They will get reinstated after awhile, and who will be the first one to be paid? Not the man who has kicked them, but the man who has upheld them and believed in them.

The President—Gentlemen, the hour to adjourn is near at hand and I think we will continue this discussion at the afternoon session. [A recess was taken to 2 P.M.]

[To be Continued.]

Boilers and Boiler Compounds.

[A paper prepared for the Fourth Annual Meeting, Iowa District Gas Association, by MR. C. N. CHUBB, Sioux Falls, S. D.]

This paper will deal with the economical operation of steam boilers, irrespective of the fuel used, and with their proper care and maintenance. A steam boiler worked continually should be let down, washed, scalded and repaired at regular intervals. The length of time a boiler can be operated without cleaning depends on the kind of water used. When the supply of water is not constant, as from rivers, especially, the length of time a boiler can be operated will vary with the time of year and the climatic conditions. A comparatively soft river water, under ordinary conditions, might become very hard during a dry season; that is, the river would not be getting any surface rain water (which is soft), but obtaining all its water from source springs which were hard. Water from large ponds, lakes and deep wells is generally more uniform in quality.

When a boiler is let down, preparatory to being cleaned, it should not be blown down and cooled off quickly. When blown down while hot, the mud and scale left in the boiler are hardened and made more difficult to remove. The sudden cooling of a boiler puts it to strains that are liable to make the flues leak and crack the castings on the fire-box doors. The practice of blowing down a boiler and directly filling it with cold water to crack and loosen the scale is very bad. In this connection I believe that a boiler that is operated only 8 or 10 hours in 24 should have the fire banked. This keeps the boiler and water warm, instead of allowing the fire to go entirely out and then steaming up the boiler when wanted in a great hurry, say 30 or 40 minutes. This sudden steaming up of a boiler once in every 24 hours has the same effect as the sudden cooling down. The difference in fuel efficiency between banking the fire and quickly getting up steam each day is very little if any.

When the steam pressure has gone down, fill the boiler with water nearly to the dome, remove the top manhole plate and put in 10 pounds of caustic soda, or 20 pounds of soda ash, per every 100-horse power and let the boiler stand for two or three days. If it is not possible to let the boiler lie idle this length of time, double the amount of boiler compound you are using the last 2 or 3 days before letting the boiler down, care being observed not to use enough to cause priming and foaming. In this way you soften and loosen the scale. As soon as the water is drained off, wash the boiler out thoroughly with a strong stream of water. If there still remains much scale, it should be removed by hammering and chiseling. The construction of some boilers makes this latter almost impossible. For water tube boilers several hammers and knockers for tube cleaning are on the market which are very good; these are run by steam, compressed air, or water power.

Scale that cannot be removed by the above means, or that has accumulated in large quantities, may be removed by the use of acids which attack the scale, breaking it up and rotting it, so that it can be easily removed. Tannic acid ($C_{14}H_{10}O_9$), and acetic acid ($C_2H_4O_2$), may be used to remove scale formed from carbonates. Sulphuric acid (H_2SO_4) will remove the scale from sulphates. All these acids, however, attack iron and should be used only in emergency cases, and then very carefully,

Leaking tubes at the tube or crown sheets are generally good indications that there is scale on the inside of these sheets. This is a favorite point for scale to collect, probably because it is in a difficult place to get at to remove it. Boilers that are supplied with water containing suspended or organic matter, but no hard, scale forming substance, can be kept clean by blowing the boiler down daily, which removes the mud. If there is any time during the day when the fire is allowed to get low, the proper time to blow out the mud is just before firing up again, as the mud has had time to settle in the bottom of the boiler and about the blow-off pipe. When a boiler is being heavily fired, the mud and suspended matter are more or less mixed throughout the entire water volume by the violent boiling of the water, and so cannot be blown out as readily. Organic matter which collects on the surface of the water can be removed by fixing a blow-off at the water level in the boiler. This blow-off is made in the form of a flat cone, half submerged in the water. The currents and eddies on the surface of the water deposit the organic substances in this cone, where they can be blown out of the boiler by making proper connections. It is necessary to remove the organic matter that collects in a boiler, as it will unite with some forms of soft scale and mud, that, in themselves, are not troublesome but form a hard scale that is very difficult to remove. Organic matter that has collected on the surface of the water in the boiler will deposit itself on the flues when the water is drained off, and which if not washed off at once becomes hard and difficult to remove.

Another source of trouble and danger to a boiler supplied with water heated by direct contact with exhaust steam from non-condensing engines, is the presence of oil, which comes from the lubricant used in the engine cylinder. Part of the oil used in the cylinder is carried through by the steam, and is deposited in the feed water being heated by the steam. This oil is pumped into the boiler with the water in the form of small globules. These globules will float about near, or on the surface of the water, but gradually collect and become coated with mud and scale so that they finally are heavy enough to sink, and are deposited on the flues or boiler shell. This deposit is a poor conductor of heat and, when it has collected to any considerable extent, will cause the overheating of the iron, which is liable to bulge out or bag from the pressure of the steam. The oil in the exhaust steam can be removed very efficiently (in fact to such a degree that it is not considered at all dangerous) by passing the heated water through a barrel containing hay or straw; charcoal or coke will answer the same purpose. It is necessary to renew the hay, straw, charcoal or coke occasionally, before it becomes too foul to remove the oil.

Feed water that is heated before entering the boiler should be discharged below the water level (preferably throughout the whole length of the boiler), through a perforated feed pipe. Cold water, fed intermittently and discharged above the water level, will cause a sudden drop in steam pressure. The feed water should be fed constantly and at a rate just sufficient to keep the water level in the boiler at the proper height. Water discharged into the steam space or above the water level is liable to saturate the steam (called priming) beyond the point of saturation, due to the evolution of steam from the water and contact with it. The more water in the steam the less efficient it is. Poor circulation in a boiler will cause priming. Cold water should not be discharged into the boiler at one place where it is liable to chill the boiler iron and put strains on it.

Foaming in boilers is caused by the use of too much boiler compound, the presence of organic matter, or a large amount of heavy oil.

When cleaning boiler fires the stack damper must be closed as far as possible to prevent the rushing in of cold air through the firing door, for this cools the crown or tube sheets too suddenly and puts them under strains which are liable to cause leaky flues.

Boilers that are only used part of the time should, after being cleaned, be filled full of water. Boilers let down to be out of use for some time either should be oiled thoroughly or dried out; in the latter case the boiler must be stored where it will not gather moisture. A boiler out of use, if not properly cared for, will deteriorate much faster than a boiler in use. The use of boiler compounds (in this part of the country) is almost universal, on account of the poor water generally obtained for steam making purposes. These compounds, in either liquid or powdered form, are introduced into the feed water, and act on it in the boiler (or in the heater and purifier on the way to the boiler) when the water is heated and under steam pressure. Some boiler compounds are guaranteed to prevent the formation of scale, others to remove scale but not to prevent its formation, and still others to prevent the formation of scale on the boiler flues and shoots. In the latter case the scale is formed but prevented from attaching itself to the boiler iron and is thrown down where it can be easily removed. The condition of boilers using bad water can be materially improved and sometimes kept in first-class condition by the judicious use of boiler compounds found on the market. The base of all boiler compounds is the same, and in itself is harmless, if used with any kind of discretion; however, some compounds contain acid and other substances that attack iron and are very harmful. The principal objections to boiler compounds are: First, their composition is unknown, making their use a matter of experiment; second, they are liable to contain substances that will attack the boiler iron, eat up gaskets and packing, destroy brass valves, fittings, etc.; and third, they may have a deteriorating effect on any product manufactured by steam.

The principal scale-forming mineral substances found in boiler feed water are the carbonates and sulphates of magnesium, calcium and iron. All other minerals generally found in water are not troublesome and may be neglected; even iron, under ordinary circumstances, need not be considered. The carbonates of calcium and magnesium compose the "temporary hardness" of water; they are soluble in cold water only in the presence of a carbon dioxide (CO_2) and are entirely precipitated when the water is heated or boiled, which liberates the carbon dioxide. The sulphates of calcium and magnesium compose the "permanent hardness" of water, the hard scale forming substances which cause most of our trouble. Water which contains the above sulphates has to be treated chemically to be used for steam making purposes.

Water containing scale forming substances may be treated in the following ways to prevent the formation of scale in boilers: First, by mechanical means, such as hot water purifiers of the Hoppe type; second, by chemical means, where the boiler compound (or chemical agent employed to prevent the formation of scale) is introdueed into the feed water and allowed to do its work either in the heater and purifier, or in the boiler itself; third, by chemical means, where the water is softened and scale forming substances removed by chemicals before the water is heated or pumped into the boiler (such as the patented water softeners on the market).

Hard water, containing mineral substances only as carbonates, can be softened and the impurities removed so that it will not be at all injurious to the boiler by the first mechanical means. As stated previously, the calcium and magnesium carbonates are held in solution by the presence of carbon dioxide. When the water enters the heater and purifier the CO_2 is liberated and the calcium and magnesium carbonates are precipitated in the form of a grayish mud in the purifier, where it can be removed easily. This same action will take place in the boiler if the water is not passed through a purifier; but then the mud is deposited in the boiler and may with other impurities in the water form hard scale. Hard water, containing as mineral substances both the carbonates and sulphates, may be softened and the impurities removed by the second chemical means. The carbonates would be removed as in the previous case by heating and boiling the water. Calcium sulphate is also precipitated in the form of a grayish-white powder or mud; but this is a scale forming deposit and, when mixed with the mud deposited from the calcium and magnesium carbonates, forms a very hard, adhesive scale. To prevent this soda ash or caustic soda should be added to the water before heating. This changes the calcium and magnesium sulphates into carbonates which are precipitated as mud which can be easily removed as explained in the first chemical means. Thus:

$$CaSO_4 + Na_2CO_3 = CaCO_3 + Na_2SO_4$$

Water softened by the third chemical means. Here the water is not heated and carbonates precipitated as before. Caustic or slacked lime is used to precipitate the calcium and magnesium carbonates by the removal of the solvent CO_2 and caustic soda to decompose the sulphates to carbonates which can be treated. Thus: Soluble ($CaCO_3 + CO_2 + CaOH_2$) (slacked lime) = 2 insoluble $CaCO_3 + H_2O$.

$$CaSO_4 + Na_2CO_3 = CaCO_3 + Na_2SO_4$$

Similar reactions taking place for calcium salts with acids other than CO_2. For magnesium salts, the reactions would be of the same nature.

Below are three analyses of water used for steam purposes in this part of the country. The first, "A," is very hard and is obtained from a well about 400 feet deep; the second, "B," is river water, an average quality of water in this section; the third, "C," is from an artesian well, a good soft water.

A.

Calcium sulphate $CaSO_4$	44.72	grains	per	U. S.	gal.
Magnesium sulphate $MgSO_4$	3.34	"	"	"	"
Magnesium chloride	.46	"	"	"	"
Magnesium carbonate $MgCO_3$	8.78	"	"	"	"
Alumina and oxide of iron	1.53	"	"	"	"
Silica	7.83	"	"	"	"
Undetermined	21.51	"	"	"	"
Total solids	88.17				

B.

Silica	1.522	grains	per	U. S.	gal.
Calcium carbonate $CaCO_3$	8.847	"	"	"	"
Calcium sulphate $CaSO_4$	2.251	"	"	"	"
Magnesium carbonates $MgCO_3$	1.866	"	"	"	"
Magnesium sulphate $MgSO_4$	3.505	"	"	"	"
Alumina (with ferric oxide)	0.233	"	"	"	"

C.

Silica	0.624	grains	per	U. S.	gal.
Calcium carbonate $CaCO_3$	8.141	"	"	"	"
Magnesium carbonate $MgCO_3$	7.336	"	"	"	"
Sodium sulphate	0.554	"	"	"	"
Sodium chloride	0.362	"	"	"	"
Potassium sulphate	0.525	"	"	"	"
Alumina (with ferric oxide)	0.087	"	"	"	"

Water, "A," may be treated best by the third chemical means. The amount of slacked lime ($CaOH_2$) and soda ash (Na_2CO_3) required to soften this water would be obtained as follows:

Here the impurities to be removed are the calcium sulphate, magnesium sulphate and magnesium carbonate.

Soluble: $CaSO_4 + Na_2CO_3 = CaCO_3 + Na_2SO_4$

$MgSO_4 + Na_2CO_3 = MgCO_3 + NaSO_4$

$MgCO_3 + CO_2 + 2(CaOH_2O) = 2$ Insoluble $CaCO_3$ + Insoluble $MgOH_2O$.

Slacked lime (CaO) required:

Twice the equivalent of the magnesium carbonate.
The equivalent of the magnesium sulphate.

Soda ash (Na_2CO_3) required:

The equivalent of the calcium sulphates.
The equivalent of the magnesium sulphates.

The respective equivalents are:

CaO, 56; $CaSO_4$, 136; $MgSO_4$, 120; $MgCO_3$, 84; Na_2CO_3, 106.

CaO required:

$$2 \times 8.78 \times \frac{56}{84} + 3.34 \times \frac{56}{120} = 13.26 \text{ grains per U. S. gallon.}$$

Na_2CO_3 required:

$$44.72 \times \frac{106}{136} + 3.34 \times \frac{106}{120} = 37.38 \text{ grains per U. S. gallon.}$$

Water, "B," may be treated by the second chemical means. Here the impurities to be removed are the carbonates and sulphates of calcium and magnesium. The carbonates would be precipitated by heating and boiling. The sulphates would be removed in the following manner:

$CaSO_4 + Na_2CO_3 = CaCO_3 + Na_2SO_4$.
$MgSO_4 + Na_2CO_3 = MgCO_3 + Na_2SO_4$.

The soda ash crysta's are composed of $Na_2CO_3 + 10\ H_2O$ (water):

$CaSO_4 : Na_2CO_3 + 10\ H_2O :: 2.251 : x\ 40 + 32 + 4 \times 16 : 2 \times 23 + 12 + 3 \times 16 + 10\ (2 + 16) :: 2.251 : x = 4.733$ grains per U. S. gallon.

$MgSO_4 : Na_2CO_3 + 10\ H_2O :: 3.505 : x\ 24 + 32 + 4 \times 16 : 2 \times 23 + 12 + 3 \times 16 + 10\ (2 + 16) :: 3.505 : x,\ x = 8.353$ grains per U. S. gallon.

Water, "C," would not have to be treated at all, as there is nothing in it but the carbonates of calcium and magnesium which are not troublesome, as explained before. The mud which these form could be advantageously removed in a heater or purifier, as by the first mechanical means. Having the analysis of a water, it is very easy to determine the amount of chemicals to use to soften it. Of course, the changes in the quality of the water have to be considered. If an anal-

ysis of the water is not obtainable, good results can be accomplished by the use of soda ash or caustic soda in the feed water. The amount necessary for good results has to be learned by experimenting. The introduction of too much of these into the water will cause foaming in the boiler, the rusting of the engine and pump rods and the pitting of the water glasses.

That scale in the boiler reduces the fuel efficiency is well known. There have been numerous experiments made to ascertain the loss in efficiency caused by the different thicknesses of scale on the heating surfaces "but the circumstances to be considered, which determine the rate of heat transmission through the portion covered by scale of different kinds and thicknesses, either homogeneous or otherwise, are not sufficiently understood, and are too numerous to attempt anything like exact calculations." W. H. Booth's "Water Softening and Treatment," page 34, gives the following:

Loss of Heating Power Due to Scale.

Thickness of scale (inches)	1/32	1/16	1/16	1/8	3/16	1/4	3/8	1/2	5/8	3/4
Per cent. loss heating power	2	4	9	18	27	38	48	60	74	90

The subject of boilers and boiler compounds, especially with regard to water softening, is very complex and has been treated as briefly and as simply as possible.

For further study and information reference can be made to the following books and treatises on this subject: Peabody & Miller's "Steam Boilers;" Booth's "Water Softeners and Treatment;" Stillson's "Engineering Chemistry;" Blomet & Bloxam's "Chemistry for Engineers and Manufacturers."

Comparative Value of Fuels Available in the Iowa District.

[Prepared for the Fourth Annual Meeting, Iowa District Gas Association, by Mr. William Bradford, Superintendent of Manufacture, Lincoln (Neb.) Gas and Electric Light Company.]

In dealing with this question of the fuels available in the Iowa district, I have not gone into the subject of gas coals for several reasons:

1. Because none of the coal producing districts located in or near the territory included in the Iowa district produce very much coal of a grade suitable for gas making purposes.

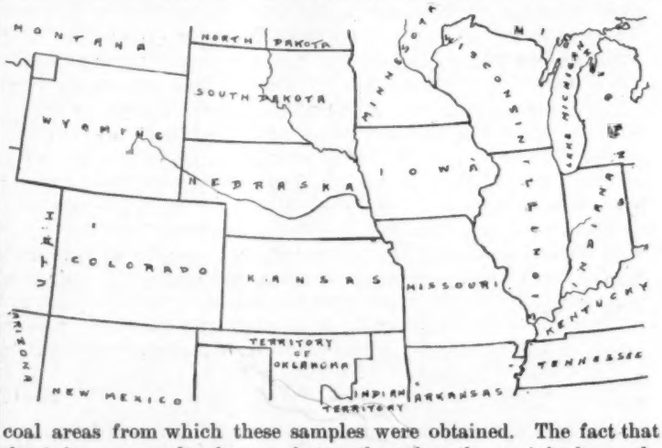
2. Because the districts from which most of the gas coal does come and the characteristics of the various coals are so well known already that I do not feel it would pay to take up the time of this meeting to go over them.

The question of the relative values of the coals from the various coal areas in and around the Iowa district, however, is one on which there is not so much data, and one which I feel should be of interest to all of us, as practically all of the coal used for steam purposes comes from these areas. I have, therefore, confined this paper to a brief consideration of these coals.

Probably the most complete and reliable tests ever made on coal, from the various fields of this country, were made at St. Louis, in 1904, during the St. Louis Exposition. At this time the United States Geological Survey established on the Exposition grounds a coal testing plant in which they carried on tests of all kinds upon samples of coal from all parts of the country. No doubt many of you are familiar with the reports of these tests, but I want to call them to the attention of those of you who are not. They are published in three Bulletins of the United States Geological Survey, and contain some very valuable data which should be of interest to all of you. Among other tests were a series of very complete boiler tests, some of the results of which are shown in Table I., for the coals from the areas around the Iowa district. Line 1 shows the number of complete boiler tests made on the coals from each State; line 2, the number of different samples of coal tested, in some cases more than one test being made on the same sample. Lines 3, 4, 5 and 6, show the average proximate analysis of all the samples from each State; line 7, the average B.T.U.'s per pound of dry coal; line 8, the pounds equivalent evaporation from and at 212° per pound of coal, as fired; and line 9, the coal cost per 1,000 pounds equivalent evaporation, assuming the cost of coal at $1 per ton. The map shows the general location of the coal areas from which these samples were obtained. The fact that the Arkansas results show up better than the others might be partly explained by the fact that 5 out of the 9 tests were made with briquetted coal.

TABLE No. 1.

STATE	ARKANSAS	COLORADO	ILLINOIS	IOWA	KANSAS	MISSOURI	NORTH DAKOTA	WYOMING	PENN
No. of tests	5	1	6	6	6	6	1	2	4
No. of samples	5	1	5	7	5	4	1	2	4
Fixed carbon	68.27	39.00	42.26	37.22	43.11	39.44	25.40	33.09	67.07
Volatile matter	17.55	35.85	34.03	34.49	33.57	33.93	28.18	36.06	22.18
Moisture	2.52	19.78	11.31	18.12	4.35	12.24	35.84	16.46	1.90
Ash	11.68	5.37	12.42	10.16	12.96	14.40	10.63	12.39	8.85
B.T.U. per lb. of dry coal	13126	12577	12293	11800	12988	12163	10402	11607	14296
Pounds water from and at 212° F. per lb. of coal as fired	8.74	5.78	6.70	6.27	7.87	6.70	3.46	5.37	9.39
Coal cost per 1,000 lbs. equivalent evaporation at $1 per ton	.0573	.0868	.0749	.0798	.0652	.0765	.1445	.093	.0556



The one sample from Colorado was a lignite and is probably not a fair comparison for Colorado bituminous coal. The one from North Dakota was also a lignite, but is a fair sample of the fuel from that area. The other samples were of various grades, but give a very fair comparison of the various coals, especially when it is considered that all of these tests were made under the same boiler and under as nearly as possible the same conditions. In the last column are shown four tests in Pennsylvania coal for comparison.

This question of the choice of fuel for steam purposes is one I think which many of us could look into with profit. It must be remembered, however, that the figures here are only average results and cannot be depended on except to show in a general way the relative values of the fuels from the various States.

FIRST ANNUAL MEETING, CANADIAN GAS ASSOCIATION.

Held in the King Edward Hotel, Toronto, June 26 and 27, 1908.

First Day—Morning Session.

On Friday, June 26, at 10:30 A.M., the President, Mr. H. H. Powell, took the Chair and said: Gentlemen, I am sure you are all pleased and gratified at the attendance this morning; it exceeds very much our greatest expectations. You know the objects of the meeting. We are here to discuss questions that may be of profit to the companies we represent and to us individually, both socially and in the matter of business. We will all have matters to present later on and discussions on the papers presented. I will have a few words myself to say later on after reports of committees. I will not take up your time at present by making any further remarks; I will simply ask the Secretary to call the roll and open the meeting.

In the absence of the Secretary, Mr. A. W. Moore, owing to illness, Mr. F. Burnett, of Toronto, acted as Secretary. The Secretary read the minutes of the organization meeting of the Association, which were approved and signed by the President.

The President then called for the report of the Executive Committee, which was read by the Secretary, who also presented and read his reports as Secretary and Treasurer. These, on motion of Mr. J. C. Hay and Mr. W. H. Pearson, were adopted.

The President called upon Mr. Coate to present the

Report of Committee on Nominations.

That gentleman said—Your Committee on Nominations beg leave to submit the following names as nominees for the positions as stated:

Honorary President.—Mr. H. H. Powell, Brantford. The Nominating Committee wishes to recommend that the Honorary President

or past President of each year be a member of the Executive Committee for the ensuing year.

For President.—Mr. J. C. Hay. In connection with the nomination for President, it was not only the unanimous opinion of the Nominating Committee that Mr. Hay should be elected as President, but it was at the request, as well, of a great number of members of the Association. There are a number of questions coming up in connection with the duties on coal and by-products, and it was the opinion of the Committee that Mr. Hay's well known services would be very valuable in this connection.

For First Vice-President.—Mr. J. S. Norris, Montreal.

For Second Vice-President.—Mr. W. H. Pearson, Jr., Toronto.

For Secretary-Treasurer.—Mr. A. W. Moore, Woodstock. Mr. Moore in his report has asked that a successor be nominated, but yet the Nominating Committee believes it is the proper course to pursue to have Mr. Moore elected. If he really should resign and not take the office, the Nominating Committee thought Mr. Keillor, of Hamilton, would be the proper person to elect; that could be done by the Executive Committee itself.

Executive Committee.—Messrs. E. J. Philip, Berlin; Charles Forbes, Ottawa; A. G. King, Toronto; John Keillor, Hamilton; and P. S. Coate, Chatham.

ELECTION OF OFFICERS.

There being no further nominations Mr. W. C. Kennedy moved, seconded by Mr. A. G. King, that the report of the Nominating Committee be adopted, and that the Secretary be instructed to cast one ballot for the officers named in the report.

Mr. Hay.—Before the resolution is put I think a better choice could have been made by the Committee; and I would have liked further that the Association should do more than that. I think it would have been proper and right, without finding any fault with the work of the Committee, that there should be put up always for all the offices at least two names. I have not very much sympathy myself with swallowing a thing of this kind holus-bolus; it gives the chance for the members of the Association to say after a while that opportunities were not given to elect their own choice, and they were what might be considered running in a ring. This is not wise, and of course it is now within the province of any member here to nominate outside of this Committee. That is ruleable in all associations to nominate from the floor of the hall anybody they may think wise. I want to say, first, I represent the smallest concern in this country, and for that reason I don't think it is wise I should hold the important position of President. I can give the Association all the assistance within my power on the outside that I can give it on the inside, and I am willing at all times to do that. The matters coming up or that may come up before the Association are matters I am somewhat conversant with, and I will give them all the ability I have along that line whether President or not; but I would prefer, and I think it would be wise in the interests of the Association, that you should nominate from the center of the hall some other name than mine.

Mr. Philip—The recommendation of the Committee is according to the Constitution, and, as far as Mr. Hay, wishing to withdraw is concerned, his own words show he is the proper man for the place. [Applause.]

The President—I quite appreciate the honor here, but I don't think it is a good thing to take any gentleman who has been in office and place him in an honorary position; I think he should get out and take a seat along with the rest in the proper way. I wish my name could be withdrawn from the position of Honorary President.

The President here read list of officers from the report of Nominating Committee, omitting his own name.

Mr. Hay—I notice that the President has dropped out his own name there. I think it is important to this Association we should still retain the experience of the President as a member of the Executive. I think Mr. Powell ought to reconsider that and permit his name to go.

The motion to adopt the report of the Nominating Committee was put to the meeting and declared carried by the Secretary.

PRESIDENT'S ADDRESS.

I suppose, following the lines of precedent, rather than what I would prefer, I am supposed to make a few remarks. As we are met mainly for instruction and mutual benefit, I will be as brief as possible and try to say something that may benefit us as an Association, rather than give utterance to any complimentary remarks.

It is rather difficult for me to address a meeting composed of those skilled in every line which is applied to the manufacture and sale of gas and its by-products, or appliances for its consumption. However, I am bearing in mind that we are here in the interest of the gas interests of Canada, hoping through this newly formed Association, as a medium, for the exchange of experiences and suggestions relating to the advancement of the processes of manufacturing and sale of our products and the protection of our interests. I do not mean that in any narrow or selfish manner, but simply to obtain the same opportunities as are accorded all other merchants and manufacturers, and no more, in this Canada of ours. In fact, that was the cause for calling into existence the Canadian Association, whose usefulness has already been demonstrated by the report of the Executive Committee presented this morning, showing for the first time a combined effort to protect our interests, viz.: Get the government, if possible, to give us the same opportunities as other manufacturers and merchants have to carry on our business under the law. Association work being necessarily largely through committees, who take up special subjects, have had for consideration the advisability of establishing a plant or plants for the working up of our by-products, which has had the effect of a company being formed and construction commenced on a plant that will combine the most recent appliances, with the modern practice of large scale operations, one that can hold its own against all comers as a result of scientific efficiency, supported and controlled by gas interests, so that we will no longer be at the mercy of combines who paid next to nothing for our products, marks a decided advance in the business.

To the reports presented by the committees, and papers being read, I trust will be given the fullest consideration, and it is to be hoped that the members will feel it their duty to contribute any information that has proved profitable to them in connection with the business. Most businesses of same or similar nature are competitors, and secrets are kept; but we are not competitors, hence, it will pay us to tell, and help each other to be a success. Mr. Pearson is going to set a good example by taking us over the Consumers new plant for carbonizing with producer gas. With your permission I will offer a few suggestions.

In the first place I think the proper plan is being pursued in regard to by-products, and we will get a larger return for them. The next is that we should get the government to change the standard test from candle power to heat units; we could then give consumers the same heat units they now get, and you could get a very much larger yield of gas per ton as well as by-products. They are getting "across the water" as much as 13,000 of 600 heat units per ton. Why should we continue the candle power test? It is our duty to educate the government and people under which standard the greatest value can be given for their money. It might be advisable for us to secure the services of a good man, and send him as a representative of the gas companies to inquire into and report on the chemical and mechanical efficiency of the various processes that have proved themselves to be the product of scientific skill and knowledge. You must be progressive or again become a "threatened industry." Welsbach proved a "wonderful help in a time of need," but he and others are helping our electrical friend in the same way, so that the advantage you had is growing less. If you want to hold the lighting business do as France and Germany are doing for the use of alcohol with incandescent mantles; to get it to light direct with a match they are stimulating invention by giving a prize of $20,000. Now you give a good prize for a mantle that does not require a match, and you will get it, and not only keep, but get a great deal more of the lighting business, when every mantle made is a self-lighter.

Desirable is the lighting, but much more so is the domestic heating and industrial business. That is the great field; it means low prices to get it, as we have to compete with free anthracite coal, free coke, government bounty-fed oil, and governm ent exploited water power electricity, truly a formidable list (particularly when we have to pay 53 cents a ton duty on the coal, our raw material), to which must be added free alcohol, and you will do well to keep an eye on it—it is being made for 10 cents per gallon and, pound-for-pound, contains twice the lighting power of kerosene—they are your competitors, and you have to beat them to get business. In addition to what I have previously stated along these lines suggest that we consider what might be accomplished by changing our methods of selling it. Can we not adopt one that will induce our patrons to be liberal consumers, one that will change the large number of non-profitable ones you all have to profitable and good consumers into a still better. Why not adopt the system of making a minimum monthly charge on the basis of "readiness-to-serve cost," plus minimum amount of gas at regular rates, than drop the price per 1,000 to that which represents profit required based on cost in holder, because all other charges are included

in "the readiness-to-serve charge." The water companies make a minimum charge for first tap, succeeding taps being very much lower, and by meter varying from 25 to 5 cents per 1,000 gallons. The electric do the same; we have them varying from 10 cents to ¼ cent per kilowatt to their customers, according to quantity. Why not do likewise; base your profits on holder cost, have confidence in your business; demonstrate that gas can compete with other fuels, as it surely can; then up will go sales, and down cost of distribution, and have in every appliance manufacturer and salesman a hearty co-operator who will help you to get business. Take a look for a moment at the natural gas distributer, whom I am sorry to find not more largely represented, how do they do? There are lots of companies, formerly manufacturing plants, now closed, carrying these whole investments on a margin of 10 cents per 1,000 feet, doing domestic business only, yet are in a prosperous condition. That will show you where other than holder costs go when you get large volume output. As my term as President is about to expire, allow me to congratulate you on the success of this our first annual meeting, the executive on the large amount of work they have done, and the energetic and enthusiastic Secretary on the very successful result of his efforts to make this Association a success.

In conclusion the President said: As our Secretary has remarked, Mr. Moore was taken ill yesterday morning. He had all the details in hand, and had given a great deal of his time and certainly worked most enthusiastically for the upbuilding and procuring of the large number of members we now have. I don't know whether it is a surprise to you, but it is to me; this is the largest association meeting I ever attended for a first meeting. I think the Secretary especially is entitled to a vote of thanks by this meeting for the very large number of persons in the membership.

Mr. Coate—Mr. Chairman, I have very much pleasure in moving a vote of thanks to the officers for the past year, for their work in the organization of this Association and all the work they have done in connection with it, and especially the Secretary of the Association. I also move that a grant of $100 be made to partly reimburse Mr. Moore for the trouble he has had during the past year.

Mr. Norris—I have great pleasure in seconding that.

Mr. Hay—I heartily support the $100 grant. I think we ought to instruct our Acting Secretary to draw up a resolution expressing our regret and sorrow at Mr. Moore's unfortunate mishap which befel him at this particular time. If that could be added to the resolution I would be very glad to still further support it.

The President put the motion, which, on a vote having been taken, was declared carried unanimously.

Speech of Mr. Hay.

The President—Gentlemen, Mr. Hay desires to make a few remarks in regard to the question of short weight in coal.

Mr. Hay—Mr. President and Members of the Canadian Gas Association and Associate Members: I am glad to-day to meet so many of you here. I have not been asked to speak on this subject, but I felt it was so important to the interests of the gas people of this country that I asked to be permitted to explain to you the work we have done through our Coal Association, and I feel that perhaps no manufacturers are more interested in this particular thing than the gas people. For that reason I felt it my duty to ask to be allowed to lay the matter before you as we have found it. I will try to put it just as concisely as possible, not making any attempt to give you a speech, because that is not in my line, just giving you a few of the facts in connection with it. I had hoped to be able to give you the facts and figures submitted to the Association two weeks ago in Hamilton in detail. I visited the Secretary's office this morning and could not get the facts and figures, for he was absent, but I can give you them in round numbers. We have gone as an Association to a great deal of trouble and a good deal of expense. We have been a year gathering statistics in regard to this short weight question; and let me say right here that perhaps the gas people are more affected than the coal dealers are, for the reason that they are dealing almost wholly and entirely in soft coal. We believe that the shortage largely occurs in soft coal. In our statistics we have taken all kinds of coal, because, as coal men, we were interested in both kinds, and we didn't make any difference in the gathering of our statistics, so that the showing to the gas companies will be very much worse, to use the term, than we have shown it to be in the coal business. I can tell you as a retail coal man it was perfectly startling to us. Now, what are the facts? And I want you to take it all in and note it, because some of you may know, and doubtless some of you do know, but the great bulk of gas companies do not know the position they are in. I want to preface these remarks with this: We have arrived at a time as gas men and manufacturers when we are moving heaven and earth, as you well know, to try and pay dividends. Some of the smaller companies cannot pay dividends at all—the larger ones fare better, but we are moving heaven and earth to find out every leak that is anywhere and everywhere, and doing our very best to buy the very best kind of coal that will give the best results as to the production of gas and residuals; and while we are doing that, my contention is that there is a great leak that a great many of us at all events have never thought of or knew anything about. Perhaps next in importance, I think, if not quite as important, is the question of getting the duty off our raw material and putting it on the residuals. Our statistics have been gathered from all over this country at different seasons of the year, and the statements in nearly all cases are sworn to. In some cases they are the railway weights and in other cases sworn to by the men themselves—the individual weights as to the out-turn of coal in these cars. Your coal comes in; you buy it all in car lots. What are the facts? The facts are, from all the statistics gathered, we have come to the conclusion, after getting the out-turn of something like 300 cars of coal from different sections, that we are losing in this country, having paid freight and duty, at least $5 a car in short weight. Averaging all the cars you take in, those of you who have considerable plants know about how many cars of coal you use in a year, and you can easily figure up what a leakage that is to your business. We have, as I said, gone to a great deal of trouble in gathering these statistics, and we felt it our duty and an absolute necessity, as far as we were concerned, to bring the matter before the Railway Commission. About a month or so ago we brought our whole Executive Committee together and laid the complete facts before the Commission, and have every reason to hope that a very great measure of relief is going to be granted to us through that Commission. I do not think I am going too far in saying so. We submitted these facts to them. In the first place we gathered all the facts, as an Association through our Secretary, asking people here, there and everywhere to weigh cars and give us returns. After having done that we secured the services of the best legal talent possible on this particular question in this city. We came down here before the Railway Commission and spent two days. We did not spend the entire time before the Commission; we got our work started on one day and finished it up the next. The Railway Companies were all represented with their prominent, leading men and their solicitors before the Commission, and we had our solicitors, and having laid all the facts before them the case only seemed to be one-sided. The Chairman of the Railway Commission asked the Solicitor of the Railway Companies, "What have you got to say on this question?" They pleaded we had not given them them the statutes under which we were proceeding. "Well," the Chairman of the Commission said, "You had due notice of this; that seems to be just a technicality; there seems to be a case made out here, a very grievous case; something will have to be done in this matter." However, he did not feel like pressing it to a final issue at that particular time. He asked our solicitor to serve the railways with the statute under which we were operating, and the matter would be taken up at the next meeting if we got all the facts before them. We have every reason to believe we are to be granted a measure of relief, even if we may not be given all that we are asking or claiming. We said to the Railway Commission, "We are not accusing the shippers of coal of not putting the weight in the cars, nor are we accusing the railways of pilfering the coal on the road; but what we do say is, we are paying for coal we don't get and paying freight and duty on that coal, we don't care where or how it occurred. What we want is to pay for all the coal we get and pay freight and duty on all we get." We tried to make our proposition as reasonable as could be. Having made that statement we went on with our case. We got that matter coming up again before the Railway Commission. The Chairman of the Commission also said, "We will permit the evidence produced here to be used." That was in order that we might not have to come again with that evidence. We are not just satisfied with what we put in, because we can make out a good deal stronger case, for we are still gathering facts. Now, what we want is this: We feel that no other class of this community is more interested than this Association along this line, and if you will figure out what you are absolutely losing in short weight you will see it runs into a very large amount of money. We have not got through. We believe and we know that we fairly astonished the Railway Commission and the railway companies themselves. I have reason to know that. I had occasion since that to come in contact with the General Traffic Manager of one of the roads. He invited me into his car. I went in and we talked the

matter all over. He said, "Why do you bring us up here as a pack of criminals before the Railway Commission? Why don't you ask to meet a Committee of our Association?" I said, "We are not accusing you of anything wrong if you don't do it; we are not bringing you up as criminals; we simply state the facts as you have known them." We have been 5 years privately and individually writing the railway companies, giving you statements of short weight, and you send it around until everybody has finally looked over the car and weighed it and it was just right. I have no objection now to say to you that we are willing to appoint a committee that will confer with you and make all arrangements and carry out the plan, and get all the details that can be got. They felt very much alarmed as to how it was going to be done and could be done. I said, "I grant you it is a big proposition, but it can be done." He said he would appoint a committee, and I said, "I have no objection to do that on behalf of the Coal Association, which will go into the whole details of this matter with you, but we want that ratified by the Railway Commission after we make the arrangement, because we will just have the same trouble if we don't." That didn't go down so well - the ratification of the arrangement. I mention that fact to show you how the railway companies feel about the matter. They see something is coming and something must be done. What is the proposed remedy? The remedy proposed is this—the matter is somewhat complicated. This coal does not originate within the bounds or jurisdiction of our Railway Commission; it originates beyond the line of some other coal company. How are you going to hold our railways responsible beyond this line? Our Railway Commission we know had no power beyond that, but what we said was this: Let the Railway Commission pass an order that all coal coming into the Dominion of Canada shall be weighed by an independent weigher, just as they do in elevators for grain, and the gross weight of every car shall be weighed detached, not a whole carload being weighed at once running over a track, that it shall be weighed detached at the border line; that the gross weight shall be put on the bill of lading; that that car shall go to its destination, and that the railway company shall weigh that car back at its nearest scales, and if they are not convenient, they shall erect scales at divisional points or at points that will suit themselves, but that it is compulsory for them to re-weigh that car. In the meantime, we said we were willing to pay freight and duty just as invoiced at present, and then that the railway company shall be compelled to rebate the freight and the Government shall be asked to rebate the duty every 30 days on what is short. They shall adjust with this and that and the other man every 30 days the freight and duty question. That looks to me like a reasonable proposition. It will be a lot of trouble for them to weigh their cars they say. It doesn't matter whether it is or not; it can be done. If they will do that it is up to us as gas men to buy our coal subject to Government weight at the border line. If we can't do that we will still be protected against whatever loss occurs in this country, as to the quantity of coal and as to freight and duty, which would be a very decided advantage over what it is now. These things occur sometimes through neglect. There are a dozen ways this shortage may happen; it may happen in the tare of the coal; perhaps the cars are not weighed carefully; open cars might have snow and ice in certain seasons of the year. But, anyway, this loss occurs and we don't get the coal; we know we don't get it. I feel that is about the case. We have to continue this matter before the Railway Commission; it has been done so far with a great deal of labor and expense. I feel that this Association ought to contribute somewhat towards the expense of the completion of this work. It is a most important matter, and at a later stage I may have something to say on that question as to what we ought to do as an Association. I think I have covered pretty much all the ground. I thank you for the hearing you have given me. [Applause.]

The President—We are all very much pleased and very much instructed with the remarks of Mr. Hay. It certainly touches us very closely. Does any other gentleman here wish to make a few remarks on the same question?

Mr. Hay - I will be very glad to answer any questions as far as I can.

Mr. Coate—I would like to ask Mr. Hay, in buying coal at the Government weight at the border, what would occur, supposing the coal came across at Detroit or at Buffalo, and the cars were weighed at the Canadian point there and then on transit between that point and the point of delivery 5 or 6 tons of coal were taken out of the car? He would still not get his coal, but still he would have to pay for it according to the Government weight at the border.

Mr. Hay—That looks to me to be very simple. If the shortage occurs in transit we will make the railway companies pay for it.

Mr. Coate—I understood you to say you would pay according to the weight at the border.

Mr. Hay—Yes; but it will be based on the gross weight and then any tare taken off. That will show the weight there. You mean if the coal is pilfered on the way?

Mr. Burnett - You would need further weighing at the point of delivery.

Mr. Hay—We have not asked them to weigh the car at the point of delivery although it is a matter that might be done; but in a great many cases it would be considerable of a hardship on the railway to do so. I think a very great deal of our shortage occurs in that way.

The President—I heard a gentleman state there were nine tons taken out of one car he bought this last winter, and I think it was largely taken in the local coal yard possibly. I think they ought to be made weigh their cars when they deliver them. They may stand them around on their switches for several days before they deliver.

Mr. Elwin—I would like to ask Mr. Hay how he proposes to weigh a cargo in a boat?

Mr. Hay—That is a proposition we have not come up against. I can see it is quite a difficult thing, because that coal is unloaded in docks where it would not be convenient to have scales to weigh; but as far as we have gone we have only been figuring on carload stuff, not on boat stuff at all.

The Constitution and By-Laws.

Mr. Norris—I have much pleasure in moving that the Constitution and By-Laws of the Association, as prepared by the Executive Committee and submitted in printed form to the members, be adopted. [Seconded by Mr. Pearson and adopted.]

Outlining the Entertainment.

The President—Mr. Pearson, as Chairman of the Entertainment Committee, will inform you what has been done along the line of entertainment.

Mr. Pearson—Arrangements have been made for the entertaining of the members at luncheon at the Royal Canadian Yacht Club. The boat leaves the foot of Yonge street at 1:15. It will take about 15 minutes to reach Hiawatha Island, and I think if we return on the 3 o'clock boat, giving us 1½ hours there for luncheon and inspection, we can return to the meeting room by 3:15, if such time arrangement suits the members. Then the Committee arranged a visit this evening for the members to Scarboro Beach Park. No time has been definitely set for leaving, but I think we ought to go there in a body. We could leave here, say at 8:30, returning when it seemed most suitable. In the morning we have secured a couple of electric busses and trams to take the members on a visit to both of the plants of the Consumers Company. It is proposed to leave the hotel at 10 o'clock, and likely we can all be back by noon.

Mr. Hay—The extreme modesty of our Vice-President prevented him from saying that the Consumers Company and the Economical Gas Apparatus Construction Company have undertaken to pay the expenses of this banquet over at the island. I know how modest he is about saying anything like that, and I think it is a very kind thing for them to do, so we really are to have a banquet at the expense of these gentlemen. We will have more to say later on about that. I mentioned that because you would be going down and paying out your good money, getting your tickets, and, like the Railway Companies, they would not be likely to rebate. [Laughter.]

(To be Continued.)

Securing Machinery to the Floor.

[Prepared for the Journal, by "R."]

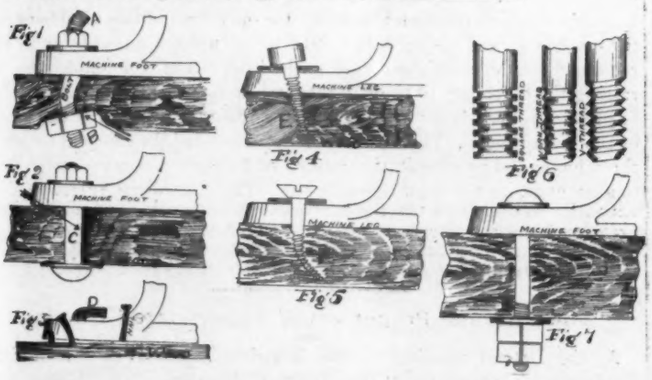
Securing machinery to the floor, so that it will be level, firm and steady, is one of the problems that often confront mechanical engineers, for machinery is frequently received at the works where or when the flooring is by no means in suitable order. The heavy, modern, high-speeded machinery of the present age demands a suitable foundation, and such foundation is often hard to obtain, since the progress in heavy and speedy machinery appears to have been faster than the progress in substantial floor building in many manufacturing plants. You can find shaky floors and sunken floors everywhere. There are cases in which the foundation of the flooring has settled; some of the joists are sprung; and there are floor boards which, having rotted, have settled out of the common level line.

There are unsound floors and dangerous places, all of which one must contend with in setting up a machine. I have seen a workman build one thickness of flooring directly over the old floor in order to get a base. Supports have been erected below, with braces and angles arranged in every way possible to get a strong foundation; but even when the foundation is right we have to get the machinery secured properly thereto.

The annexed illustrations will explain some of the imperfect methods of fastening machinery to the floors as noticed by the writer. Fig. 2 shows how, in one instance, the bolt was put through the hole in the foot of the machine, and a nut turned on either end of the shaft, as at *A* and *B*. Here we have an example of excessive strain exerted on the lumber. In this case the flooring, although of hard wood, was not properly seasoned, and the nut *B* sank into the fiber of the wood, as shown, resulting from the strong pressure exerted by the top nut. The top nut could not sink into the metal flange of the machine frame foot, consequently the nut was pulled up into the softer material of the wood floor.

I have also seen instances of corroded bolts employed for supporting the legs of machinery to flooring, as illustrated at *C*, Fig. 2. In this instance the rust and foreign matter collecting on the metal shaft of the belt tended to eat into the wood stock. In process of time the corroding consumed quite a substantial percentage of the wood immediately surrounding the belt, which allowed the belt to work freely within the space thus made. As a result the foot of the machine at that point was partly liberated and shifted.

When cases arise, as in Fig. 1, the bolt should be removed and a new one substituted, with a large washer covering the depression in the wood. In the case of Fig. 2 the decayed portion of the bore can be cut out and a wood or metal mandrill inserted to fill the hole; then the bolt can pass through the bore in the mandrill.



Sometimes we find floors and machine legs joined very poorly. Fig. 3 is a sketching of the manner noticed in a certain works where, instead of putting a lag-screw or bolt through the hole in the foot, a careless workman drove in the pin *D*, and bent the head over. Then nails were driven in about the foot as shown. The pin had to be drawn and the nails pulled. Then a lag-screw was inserted in the hole. If you get your lag-screws well started and set, you can make a firm grip on the leg; but I saw lag-screws driven in unevenly, as shown at *E*, Fig. 4. It is best to get a bit a little smaller in diameter than the lag-screw and start the bore, then turn the screw into it. If you undertake to drive the screw, as many persons do, you will get a result like that shown in the cut.

Machine legs are often dependent upon common screws for a grip to the floor, as illustrated in Fig. 5. Floors are often made of very hard stock, and when you undertake to force the screw it may assume a curved order, as at *F*. As in the case of the lag-screw, the bore should be started straight and deep enough to give the screw a good start. Screws of varied forms of cut and threads may be seen in use for fastening machinery to flooring. Sometimes the English standard or square-thread screw is used, as shown in Fig. 6. When this kind is used, it is necessary to possess the proper tool for cutting the corresponding threads in the hole.

A shaft with worn and defective threads should be avoided. I have seen extremely poor threaded shafts employed in some cases. Almost always the defective screw will release the fastening and the work will have to be done over.

The V shaped thread is popular and useful. It can be turned into a hole which is but lightly tapped, and for this reason is convenient. A good gripping combination for a machine which is inclined to wiggle is shown in Fig. 7. A common, round-headed bolt is passed through and the nut is turned on tight below, as shown. Then this nut is locked with another nut. Such a combination is hard to break.

The Wiring of a Small City.

By Mr. W. J. Canada, in "Elec. World."

The difficulty of securing a standard class of electric interior wiring in the small city has lately brought about a large amount of correspondence in an effort to locate the reason. It seems to be current opinion that the fault is mainly with the low-grade business policy of the local service company, and its apparent desire to connect to any wiring installation, no matter how defective from the standpoint of safety and reliability as to future operation, when an immediate revenue is in sight.

Such difficulties do not uniformly appear, and the small town lighting company is frequently as much alive as the underwriters themselves to the necessity for keeping the wiring of buildings reasonably free from fire hazards as well as other defects. This has been the experience in the Rocky mountain field, practically without exception. The service companies have evinced a desire and demonstrated a willingness to support standard wiring by all means at their disposal, even where some business must initially be lost.

The territory consists of a good number of cities between 4,000 and 15,000 population, scattered over a territory 400 by 100 miles. There are three large cities which are not being considered. About half the smaller cities have some form of city electrical inspection, generally assisted to a considerable extent by the Rocky Mountain Fire Underwriters.

The plan followed has been for the underwriters' representatives, of whom only two are now engaged in electrical inspections, to take up the matter of general wiring improvement with public, contractors and lighting company simultaneously, especially impressing the public with the fact that satisfactory service, permanency of installation and satisfaction of insuring interests are all guaranteed alike by standard methods of wiring. Some rewiring usually follows a campaign, the matter being ordinarily taken up by some commercial body, or by the city government. In all cases marked improvement in the new installations has followed within a reasonable time.

Two years ago only scattered cases of standard wiring had appeared in any of these cities, and the average conditions were probably worse than those of the average town of equal size farther east, because of the less experience of the wiremen in the small Western city. To-day a majority of these cities are installing wiring which will compare well with new wiring anywhere, and the defective installations are being rapidly replaced, in some cities several buildings in congested districts being standardized weekly. Service companies willingly co-operate by refusing connection to hazardous installations. Contractors and public alike endeavor to secure permanency equal to other forms of building construction, and inspection by the underwriters is demanded and their expenses of travel paid for, usually by the contractor.

One considerable difficulty still, is the lack of co-operation by manufacturers, who continue to supply the field with defective materials and fittings. The supply houses are endeavoring to co-operate in their selection and selling, but claim inability to avoid carrying defective material, owing to competition. This matter seems capable of solution, and should be in better condition as present stocks of defective materials are eliminated.

In the Rocky Mountain field, Denver at present furnishes in some ways a poor example. The major demand for unapproved fittings comes from Denver, where a well-equipped and well-paid inspection department fails to check their use from a species of inertia very hard to understand. In many ways Denver is well advanced electrically, with conduit required in all new buildings except single dwellings. But laxity in regular city inspection is responsible for the existence still of much new construction of an unfinished character. Special rulings for individual cases are too frequent, and embarrass the contracting wireman. The rewiring of old defective installations is also obstructed by special city rules, making reconstruction more costly than would be required by the National Electric Code. As a result, Denver is rather behind the smaller cities of the field in the general conditions of safety in wiring and wiring improvements. The lighting company is very progressive and in most ways aids in securing safe wiring, but it cannot undertake to advise the city inspection department as to approval of either material or manner of installation,

beyond a certain limit. The fact that the service company also owns the gas business somewhat delays the use in Denver of the newer lamps and the cheaper wiring installations of which they invite.

Taking a group of five cities in northern Colorado, which have many similar interests and whose conditions of building and business are otherwise similar, the improvement in eight months has been such that an average of only 1.3 defects was found in May in 23 new installations. The average of defects was 14.1 in 17 new installations inspected in September of 1907 in these same five cities. The general improvement in illumination has been even greater, more light and better arrangement bringing continually greater demand and better satisfaction with the lighting service.

Gasoline lighting systems, by giving the public a cheap, if comparatively unsafe and troublesome light, have replaced some of the old, overloaded and poorly arranged wiring systems in these cities. This change has frequently had its primary cause in a disgruntled frame of the business man's mind, and some lack of tact on the part of the service company's employees. Proper co-operation and attention to the necessities of the business public on the part of underwriters and lighting companies have not only given a check to the use of such systems, but in several cities they are already being rapidly replaced by standard wiring and tungsten clusters, with which both primary cost of installations and subsequent cost of service are considerably lowered and the safety and convenience incomparably improved.

The whole secret is in the exercise of tact and business principles between lighting company, contractors and underwriters, and the public will see the benefit of standard wiring and co-operate also. If either of the above interests—contractors, lighting companies or any commercial body—cannot be induced by proper representations to actively co-operate toward the end of good construction and a graduul removal of dangerous wiring systems in the older buildings, the movement will be checked seriously at every turn. To bring these interests together is the task ordinarily devolving on the underwriters, and while frequently discouraging in any single city, progress is always possible where reasonable prosperity exists. The small city where improvement is at a standstill in wiring is usually moving backward in other ways.

Technical Training for Gasfitters.

The *Gas World*, in mentioning the scheme of the Gas Light and Coke Company, of London, in respect of its class for the technical training of gasfitters, notes:

A report was submitted to the London County Council the last week in June by the Education Committee on the subject of the training of gasfitters. The directors of the Gas Light and Coke Company, the report stated, had had under consideration a scheme for the training and education of lads, not less than 14 years of age, to enter their service as gasfitters, and the Company had submitted the scheme for approval by the Council. It was proposed that the Company should provide a workshop, fitted with plant and apparatus required for demonstrations and practical work, and also provide the necessary instruction,, the Council undertaking instruction, preferably at the Westminster Technical Institute, on two or three afternoons a week, in mechanical drawing, workshop arithmetic, composition and *precis* writing. After a year in the workshops the boys would go out with the gas fitters, but would still continue to attend the Technical Institute on two or three half-days a week. The Company asked for the assistance of the Council in recommending suitable boys for the training, which it was proposed should cover a period of two years commencing in September. During the first year 24 boys would be taken and 48 in subsequent years, and it was thought that regular appointments could be found for 24 a year, although permanent employment could not be guaranteed by the Company. The boys would receive at least 62 cents per week from the beginning of the course of training, and the Company reserved to themselves the right to discharge any lad they found unsatisfactory, and to place in the training shop lads other than those recommended by the Council. In the second year of their training the boys might expect to receive about $2.50 per week, and after they had passed through the course of training they would probably become fitters' mates, earning from 75 cents to $1 per diem. Later, if satisfactory, they would become fitters, receiving $1.25 to $1.75 per day, while the next step would be to that of foreman, at from $2 or $2.25, with a subsequent opportunity of promotion to assistant inspectors at $750 per annum, and ultimately to inspectors at $1,000. The proposal constituted a very important departure in the direction of an association between employers and the Council's schools. A somewhat similar proposal dealing with older students had been made by the South Metropolitan Gas Company, in the form of a request that classes might be provided for their employees in the chemistry and technology of gas making, a subject which it would be possible to deal with very thoroughly in the proposed new Technical Institute for Southeast London, but which could be dealt with for the present in the evening classes of the Goldsmiths' College. The action of the Gas Light and Coke Company differed from that of the firms of silversmiths who approached the late Technical Education Board with a request for the establishment of apprentices' classes in silversmith's work on Saturday mornings, inasmuch as the Gas Light and Coke Company were asking the Council to supplement the workshop instruction which they proposed to give to their apprentices, by instruction in elementary science and in other subjects bearing upon the occupation of the boys. In this respect the Company had followed the lead of the War Department in the arrangements which they had made for the training of arsenal apprentices in the Woolwich Polytechnic, but the present was the first case in which a commercial company had taken action in respect of the training of junior apprentices.

There had been many cases in which persons interested in particular trades had asked the Council to assist in the purely technical training of the employees, and the committee felt it would be exceedingly helpful if the larger employers in London could be brought into touch with the public elementary schools in such a way that the employers would express their willingness to take, on the average, so many boys from a particular school, conditionally upon the boys attaining a certain standard in their ordinary school subjects, and, further, on condition that the boys, after starting on their apprenticeship, continued their education by attending classes provided in continuation schools of the Council, at certain times when the employers would undertake to allow the boys freedom to attend. Co-operation of this kind between the employers and the schools would be of untold advantage to the boys and would greatly conduce to the interests of the employers, by raising the efficiency of the workers, while it would probably go far to prevent a very large number of boys from sinking into the ranks of the unemployed. The committee recommended the Council to adopt the scheme and to submit the names of 24 boys to commence in September next, on the conditions set out. The committee further asked authority to appoint a teacher of workshop arithmetic and mechanical drawing for three afternoons a week at $2.62 an attendance, and to purchase equipment and materials at a cost not exceeding $176. The Council unanimously adopted the proposals of the committee.

The Thermal Properties of Superheated Steam.

At the Detroit meeting of the American Society of Mechanical Engineers, a paper on "The Thermal Properties of Superheated Steam" was contributed by Prof. R. C. H. Heck, of Lehigh University. The paper gave a graphical comparison of the data from the experiments of Knoblauch and Jakob and of Thomas on the specific heat of superheated steam under constant pressure. This shows a marked difference near the point of saturation. The author explains conditions at this point and finds evident errors in the interpretation by Knoblauch and Jakob. Views are given of the critical state of water and a new interpretation is made of Knoblauch and Jakob's results, bringing them into essential agreement with the work of Thomas. The author treats of the higher range of superheat, referring to experiments of Holborn and Henning, and gives a combination of data derived graphically, showing the probable manner of variation of specific heat. There is a table for superheated steam, giving specific heat, heat added above saturation and entropy above saturation. Other data are also referred to, with several comparisons and a statement of the general considerations involved. As Prof. Breckenridge explained, this paper has endeavored to take the results of all earlier experimenters and deduce from them the truth.

A discussion by Prof. W. D. Ennis, Polytechnic Institute, of Brooklyn, was submitted by A. L. Rice. The writer agreed that the question of the specific heat of superheated steam is now about settled. He believes that if the same temperature for the higher degrees of superheat had been used by the German experimenters the same results would have been reached as by Thomas.

Another prepared discussion in the absence of its writer, Dr. H. N. Davis, was offered by Prof. L. S. Marks, Harvard University. It had to do with the lower ranges of temperature and compared the results obtained by Knoblauch and Jakob and by Thomas. He compared the methods of the two and pointed out advantages in those of the former. The Thomas method of determining when the steam is

saturated was criticized as being not necessarily a true indication, and this would explain the higher values for superheat at low ranges of temperature found by Thomas. Dr. Davis submitted a series of curves correcting the results of the two experimenters. He also criticized the treatment in the neighborhood of the critical state.

Prof. H. T. Eddy, of the University of Minnesota, submitted a set of diagrams which he had plotted for his own convenience, with the aid of which he compared the results of the different experimenters. Thomas' results he considered to be straight lines, within the limits of practice. These curves enable judging somewhat of the value of these results in relation to one another. He also referred to the paper read by A. R. Dodge on "The Specific Heat of Superheated Steam," at the Indianapolis meeting 1 year ago. Concerning Thomas' conclusions Prof. Eddy considered that he had taken liberties with his experiments. It is Prof. Eddy's idea that superheated steam can be regarded as a gas, but a different gas for each pressure. In this connection H H. Supplee referred to gas turbines, in which the gas is cooled by the admixture of steam which then becomes a gas, and declared that knowledge of the specific heat at very high degrees of superheat would be useful.

Special English Correspondence.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, July 10th, 1908.

A Practical Experiment with the Coalite Process.—A Noble and Righteous Action.—Teaching the Rising Generation.—A New Calorimeter.

It is several months since I had anything to say about the Coalite Company, as a possible competitor with gas works coke. Meanwhile the gas companies have been pursuing the even tenor of their way, and for the most part doing extremely well in the coke yard department. For some little time, rumors have been abroad to the effect that negotiations were in progress with an important gas undertaking, and now the secret is out, as the Chairman of the Plymouth Gas Company, at the annual meeting of shareholders, has announced that an agreement had been arrived at with the Coalite Company, apparently on the lines of "Heads I win, Tails you lose," seeing that he was able to assure the meeting that under no circumstances would any responsibility or loss fall upon the Gas Company. The Coalite Company are to supply half a million cubic feet of gas per day, being about 18 per cent. of the total requirement, at a price lower than the Plymouth Gas Company can make it for themselves. No doubt, in entrusting an indirect share of their responsibility—the Company being under the usual Parliamentary obligations in regard to quality and quantity of supply—the fact that the negotiations must cover a wider basis than that of mere buying and selling, has not been overlooked, and it would be invidious to enter upon an advance criticism of contingencies that may or may not arise. The possible effect of Coalite on the regular coke business of the company, the quality and purity of the supply of gas, and various other details, will not have escaped consideration. It may also be remarked that the Coalite Company have entered into competition with an unusually cheap gas. The present selling price is only 42 cents per 1,000, with discounts for engine use, and if they are able to prove that they can make a commercial success under these circumstances, they will have a more powerful argument in favor of their process than any yet advanced. Another view should also be stated. Cheap gas in any district necessarily means cheap coal, and as the production of gas is only 5,000 cubic feet per ton of coal carbonized, it is evident that the cost of coal is a much more important consideration to the Coalite syndicate than the price received for the gas. Coal at 10s. per ton, less 5,000 cubic feet of gas sold at, let us say, 9d. per 1,000 cubic feet, gives a net cost of 6s. 3d. Coal at 17s. 6d. per 1,000 cubic feet, less 5,000 cubic feet of gas at double the price, gives a net cost of 10s. So probably the Coalite Company have acted wisely in their day and generation, in selecting Plymouth as a practical starting post. Meanwhile we may await the result of the carrying out of this contract. What one particularly wants to know is the price that the public at large are willing to pay for this special product, as compared with the current values of coal and coke.

The gas workers of Great Britain, from the Chairman downwards, have always shown evidence of patriotic feeling by supporting and taking part in the volunteer movement. Both as officers and as privates they have taken an active position in the service since its inception about 50 years ago. Many of the large gas companies have complete companies recruited exclusively from the names on their pay sheets, and even the smallest undertakings can boast of representation. All who prefer the voluntary to the compulsory system of home defence will be interested in an event that occurred a few days since. Two companies of the "Rangers, 12th Battalion, City of London Regiment," mustering nearly 200 strong, composed exclusively of employees at the Beckton Gas Works, the largest works owned by the Gas Light and Coke Company, formed up at Beckton, and marched in full order a distance of 8½ miles, in response to an invitation from the Governor of the Company, Mr. Corbet Woodall, to visit him and spend an afternoon at his home at Chislehurst. The party received a hearty welcome and hospitable entertainment. A further evidence of the sympathy felt by the heads of this large undertaking with the volunteer movement is afforded by the fact that the Directors have recently considered the pecuniary position of those who undertake to give up a week or more during the year, for the necessary camping and training, and have made arrangements that will admit of any employee taking part without, as has hitherto been the case, incurring an important monetary loss. In future any officer or employee of the Company, going to camp for his annual training, will be allowed leave of absence with pay to the extent of half the time he remains in camp, but in no case exceeding 7 days, without prejudice to his annual holiday. He may also receive leave with pay for one half-day in the year, to admit of attending the course of musketry. This is a noteworthy innovation, as, with the exception of particular occasions, the volunteer employees have not hitherto received any special consideration. The usual practice has been to work in the time at camp with the annual holiday, as gas workers are not as a rule in a position to incur the loss of 7 to 14 days' pay, even if special leave of absence could be considered. It speaks volumes for public patriotism when we find that even under these circumstances the gas workers are so well represented on the muster rolls. And if the excellent example most appropriately set out by the Gas Light and Coke Company should find many followers, as it is almost certain to do, the position of a deserving class of men will be materially assisted. A great deal is (and very rightly) being done for the aid of the spendthrift, the drunkard and the criminal, but is there not a large body of deserving workers, who are not less worthy of consideration because they have never appeared before the Poor Relief Board or the Police Court Magistrates, and whose sturdy independence leads them to undergo very real privation and suffering, rather than to plead poverty? The Gas Light and Coke Company have done a noble and a righteous thing, and their dividends will not suffer by it. The chief difficulty in gas works, railway stations and other places where the work must be maintained continuously day and night, week day and Sunday, is that a strict limit must be placed upon the number that can be absent at one time, and it is not easy to see how this can be overcome. A gas company, for instance, could not dispense with half its entire staff, or even with a quarter, for a whole week on end, and this particularly applies to country places where supernumerary aid is scarce.

The education of workmen—not merely of the chief officers, but also of the rank and file, and especially of those who actually do the work in the district and come into personal contact with the customers—is a matter that increases in importance every year. Under the *regime* of the past generation, the gas company's fitters finished their duties at the meter. There was no great call for intelligence or resource in the mere laying of a service of given size or the fixing up of a meter. The work was mere routine, easily carried out, and as easily supervised. But since gas companies have extended their sphere of operations, and carry out all classes of gasfitting work, including repairs of all kinds to existing apparatus, the fixing up of heating or of cooking stoves, and maintenance of incandescent burners, there is need for something more than the mere capability for screwing pipes together or for blowing a joint. However efficient the plans for setting out the work or for superintending the carrying out, it is impossible to preserve the gasfitter from a certain amount of responsibility, calling not only for a knowledge fully abreast of the times of all the latest improvements in appliances, but for considerable tact, judgment and knowledge of human nature. It would be a simpler matter if he could always insure bare walls and unfurnished rooms to work in. But a large portion of his work must perforce be carried on in fully furnished, decorated and occupied houses. Not only should he know how to make a sound, workmanlike job, but how to effect the same with a minimum amount of injury to paper, paint and furniture, and possibly with a minimum amount of annoyance to persons occupying the same, or adjacent apartments to the

scene of his labors. He requires no inconsiderable stock of good humor and patience, for people are more nervous and irritable than was formerly the case, and if he makes much noise with his hammer and saw, they do not conceal their annoyance. He should, therefore, know how to work quietly, and to exercise judgment in this respect when occasion demands. Some workmen have, unconsciously to themselves, formed careless, noisy habits, and drop tools, shout to their mates, etc., and generally mess about to an altogether unnecessary extent. So he must not get into a way of thinking that all required is to make a good job, without regard to other considerations. He will frequently be called upon to deal with people who do not know their own minds for an hour together, and when he is half through with his job they come round and want alterations or additions, or require his opinion on all sorts of things.

It was recently noted, with much satisfaction, that at last a chair for gas engineering was established in one of our Universities. And it is with equal pleasure that I observe that the Gas Light and Coke Company, of London, have entered into an arrangement with the London County Council, under which a number of lads from the Board Schools will be entered for training as gasfitters. The Company are to provide everything necessary for appropriate technical training, and the Council will afford facilities, on two or three afternoons a week, of attending classes on general subjects, such as mechanical drawing, arithmetic, composition, etc. Two dozen lads are to be taken as a beginning, but four dozen in subsequent years, and the course will cover 2 years, after which the candidates will be eligible for service as fitters' mates, with a prospect of promotion to gasfitters' duties. They will also have a prospect of rising to the position of foreman, assistant inspector, or chief inspector. There are several satisfactory features about this scheme. The lad receives a small wage from the commencement, an advance in the second year, a bare living wage as fitters' mate, and afterwards a regular artizan's pay, with the prospect of rising to positions commanding good salaries. He has therefore every possible inducement to regard himself as provided for during the whole of his life, subject, of course, to good behavior, and may therefore be expected to put forth his best abilities. The whole arrangement constitutes a very important departure from existing custom. Some few companies—but very few—have in various ways facilitated or assisted their employees in the matter of improving their technical knowledge, by providing special lectures or classes, but no one appears to have tapped the rising generation. It is simple and easily within the capability of any large undertaking, or of a combination amongst smaller ones. To use a hackneyed expression it supplies a long felt want. And as remarked on the previous occasion, considering the magnitude and importance of our industry, the wonder is that something of the kind has not been done before. The results of the scheme will be watched with considerable interest.

I have recently been using a calorimeter for solid fuels, recently placed on the market by Messrs. Alexander Wright & Co., of Westminster, which presents several features that commend themselves to practical men. It is cheap in first cost, simple, easy and fairly rapid in operation, and is self-contained, that is to say, it does not call for extraneous apparatus such as a battery and coil, or a supply of oxygen. It is an improvement on the well-known Lewis Thompson apparatus, in which a powdered sample of the fuel to be tested was mixed with chlorate of potash and other ingredients in sufficient quantity to supply the oxygen necessary for complete combustion, placed in a water tight vessel and immersed in a jar containing a known quantity of water, and the rise in the temperature of the surrounding water gives the data required. The mixture was fired by a slow match attached and ignited before screwing up the lid. In the Roland Wild apparatus we have the same essential features. There is the water vessel, with jacket to prevent loss by radiation, and the bowl for containing the mixture. The improvement consists in the use of sodium peroxide instead of the chlorate mixture, and of a hollow stem, through which a piece of red hot wire can be dropped, after all is in position, to start the combustion. This is a great advance in the direction of certainty and safety, as the slow match was doubtful in action, and chlorate of potash has an awkward knack of developing explosive tendencies when mixed with any organic matter. The calorimenter is an excellent means of checking the quality of coal and coke. The data from a fair representative sample having been accurately taken any deviation in quality due to excess of moisture or of incombustible matter in subsequent samples is indicated by the results. It is, therefore, an excellent fuel test, as indicating the necessity or otherwise, for more detailed examination.

Items of Interest
FROM VARIOUS LOCALITIES.

From the sworn statement filed by the Indianapolis (Ind.) Gas Company with the City Controller, it is shown that the output of the Company, for the half year ended June 20, 1908, amounted to 477,466,200 cubic feet. By months the output was as follows:

Month.	Output, Cubic Feet.	Month.	Output, Cubic Feet.
January.....	89,176,200	April.....	77,926,500
February.....	84,255,800	May.....	76,847,900
March.....	79,637,600	June.....	70,222,200

The Public Service Commission, of New York, has approved the application of the Brooklyn Union Gas Company for the right to issue $3,000,000 in common stock, to be exchanged for an equal value in debenture 6's issued in 1904.

At the annual meeting of the Milford (Mass.) Gas Light Company, those officers were elected: Directors, J. B. Bancroft, B. E. Harris, F. J. Dutcher, Geo. A. Draper, Chas. F. Claflin, L. H. Cook, N. B. Johnson and J. E. Walker; Treasurer, B. E. Harris; Secretary, H. A. Brown.

Since the 1st inst. the rate per kilowatt hour for electricity supplied by the Waltham (Mass.) Gas Light Company has ruled at 17 cents, less 2 cents per kilowatt hour for prompt payment of accounts—within 15 days.

The Brockton (Mass.) Company's new rates—$1.20 gross, and $1.10 net—are in effect since the 1st inst.

The following correspondence explains itself:

Office of Heinrich Koppers,
Essen-Ruhr, July 7th, 1908.

To the Editors American Gas Light Journal: While reading my American Gas Light Journal, dated June 22d, I noticed an article on a "New Method to Obtain Sulphate of Ammonia," prepared for you by Mr. Frederick Egner. It is an admirable article, but an injustice has (unconsciously, I believe) been done to me, in that your heading does not contain the full title of the lecture, as did the articles published by the German trade papers. The full title translated should read: "A New Method to Obtain Sulphate of Ammonia: Kopper's Patent." This, I feel sure, your sense of equity will immediately recognize, is very important to me that it should be mentioned. May I, therefore, appeal to you to have the injustice remedied in an early issue of your esteemed paper? I may add that I have an English pamphlet giving full details of the new process, and American readers who are interested may obtain a copy by applying to my representative in America, Mr. Louis Wilputte, care The Illinois Steel Company, Joliet, Ills. I may also inform you that I am preparing a treatise on "New Method of Coal Carbonizing." This will appear in pamphlet form, and I shall take the liberty of sending you a copy in due course. In the meantime, may I prevail upon your goodness to bring the pamphlet to the notice of your readers as soon as you receive copy?

Ocean Grove (N. J.) religious capitalists who, through their ownership of a very mediocre electric lighting plant that furnishes earthly illumination (ghostly would be better) to the summer, fall, winter and spring residents of that celebrated camp meeting ground, and who will neither distribute good gas nor allow anybody else to distribute it, should write to the Rev. J. S. Frazer, of Mobile., Ala., for information on gas as an aid to camp meeting work. The Seashore Camp Ground (it is also devoted to the spread of Methodism) is located on the Gulf, close to or not very far from Biloxi, Miss., and not long ago a gas plant was built in Biloxi, and the Seashore campers immediately availed themselves of the offer of the Company to pipe "the campus." To end it all, a letter from a correspondent who was interested in selling gas stoves for cooking purposes "down that way," just to hand, says, among other things: "Gas is now piped into the grounds, and the result is that the comfort of the campers is much added to by the good work that is so readily and easily done on a gas stove."

The Louisville Gas Company some days ago handed over to the city authorities a check for $27,760.33, which sum was the city's share of the 3 per cent. dividend on the $925,000 of stock owned by it in the Company's capital.

A CORRESPONDENT in San Francisco, writing under date of the 17th inst., incloses the following: "Last Tuesday the San Francisco Gas and Electric Company gained the first point in its contest with the Supervisors over the readjusting of the gas rate. The point was in respect of the Company's action to restrain the Board of Supervisors from enforcing the 85-cent gas rate ordinance recently enacted. Judge Van Fleet, before whom the application was argued, issued a temporary restraining order, by which the Company may continue to charge $1 per 1,000 until the issues involved are determined by the Court. The Company filed a bond for $115,000 as a guarantee to refund the money collected in excess of the 85-cent rate in case the ordinance is sustained.

"THE reform Mayor of Marshalltown, Ia. (his name is O. L. Ingledue), has started his crusade respecting the rates that may be charged by the local Light, Power and Railway Company, in that he recently caused to be introduced in the City Council three ordinances in the premises. The first of these repeals the existing ordinance, another fixes the gas rate, the last fixes the rate for electric current. The present rate charged for gas is $1.45 per 1,000 cubic feet, gross, less 20 per cent. when bills are paid by the 10th of the month. The proposed rates are: For illuminating use, $1, gross; for fuel use, 90 cents, gross, with a scale of discount varying from 25 cents per 1,000 cubic feet to 40 cents per 1,000 cubic feet, depending upon the quantities used each month. The electric rate is put at 12 cents per kilowatt hour. It is needless to add that the proposed gas rates are to all intent confiscatory.—BLAKE."

THERE is no doubt that an artificial gas plant will be constructed in Decatur, Ind., this fall, with the likelihood that the franchise will go to Messrs. Samuel T. Murdock and Thomas Wishard, of Lafayette, Ind. If these men engage in the enterprise, Decatur will surely start with a proper supply of the artificial article.

THE special meeting of the shareholders of the Nashville (Tenn.) Gas Company, to act upon the proposed increase in its capital stock amounting to $402,500, has been postponed to the 18th prox.

THE proposed gas meter testing ordinance for Hammond Ind., specifies that any gas user may make application to the Inspector of Buildings to have his gas meter inspected. If the test shows the meter to be within the legal registration limit (2 per cent. either way) the consumer shall pay a fee of $1; if the meter is without the limit either way the Company must pay the fee for testing.

"A NOTABLE occasion in the routine of the Y. M. C. A. vacation school of Milwaukee, Wis., was the visit of the boys of its advanced class to and through the works of the Milwaukee Gas Light Company. The inspection completed, the lads accompanied by the Masters, of course—visited Mitchell Park, in which beautiful pleasuring ground an excellent luncheon was completely 'absorbed.'"—F. V. T.

THE new retort house of the Worcester (Mass.) Gas Light Company which is being constructed and equipped by the Riter-Conley Company, of Pittsburgh, Pa., will be 165 feet in length and 100 feet in width, is arranged to hold 150 retorts, and it will be equipped in the main after the plans so well demonstrated in the magnificent horizontal plan house now working so satisfactorily in the Casino Beach plant of the Consolidated Gas Company, of New York. The expenditure will not fall short of $400,000. Work on the foundations was started late in the winter of 1907, and it is assured that the plant will be in working order by November next. The foundation work gave considerable bother and some vexatious delay, a quicksand having been encountered that made necessary the driving of 1,200 piles.

"L. M. G.," writing from Leominster, Mass., says: "The town of Wakefield is in a quandary just now as to one of its municipal ventures, at least it seems fair to so think from the following which appeared last week in one of our local papers: 'The question as to whether the town of Wakefield should sell its present lighting plant and purchase electric current from some outside place or person, or rebuild it at an expense of $52,000, was discussed at a special hearing recently had in the town hall. Little was accomplished aside from the fact that the special committee got an inkling of the sentiment of some of the citizens, which expressions were very diverse. The plant and machinery are antiquated, and it is quite a certainty the present outfit cannot be run on a paying, or even on a self-supporting basis, without expending at least $52,000. The gas end of the scheme also sadly lacks a new storage holder.'"

RIGHT in connection with the above on municipal ownership and operation of municipal gas and electric light plants in Massachusetts comes the following from Clinton, Mass., where, at an adjourned meeting of the "towners," held the 14th inst., the following resolution was offered:

"*Voted*, That the town acquire a plant for the manufacture and distribution of gas and electricity for municipal use and for the use of its inhabitants."

THE General Gas Light Company, of Kalamazoo, Mich., has brought suit against the American Gas Light Company of the same city, in the United States Circuit Court, for infringement of patent, urging that defendant has appropriated its patent rights without consideration, and praying that it be estopped from all further infringing,

MR. JOSEPH A. MCNAMEE has resigned the Secretaryship of the Consumers Gas and Fuel Company, of Atlantic City, N. J., and J. W. Calloway has been chosen to succeed him.

"W. T. M." incloses the following, from Providence, R. I., under date of the 18th inst.: "I failed to note anything in your columns respecting the finding of the jury in the case tried early this month in which the Providence (R. I,) Gas Company was the defendant. The clipping inclosed will give it to you."

THE clipping referred to by our correspondent, which bears date of the 7th inst., is appended: "A verdict for Payne & Butler was rendered by the jury in the suit tried before Judge Brown in the Superior Court, assessing damages against the Providence Gas Company for $17,240. The plaintiffs are lessees of certain oyster beds in the region adjacent to Sabin's Light, and claim that large quantities of coal tar, oils and refuse from the manufacture of illuminating gas at the two plants of the defendant Company in Providence were allowed to float into the salt water and that great quantities of oysters were thereby destroyed. The quantity of shellfish affected by the matter flowing down the Providence river from the defendant's works, and belonging to the plaintiffs, was placed at 48,000 bushels. The defendant Company raised the question of the constitutionality of the statute under which the State leases the oyster beds to individuals. Many expert witnesses were called during the trial."

MR. L. F. KEYSER, writing under date of the 16th inst., incloses the following: "Kirkwood (Mo.) has advertised for applicants for a gas franchise, and as a sop, or an inducement, or a bait, to or what not, to prospective bidders, intimates that it will sell to the successful aspirant the municipal electric light plant. This flamboyant scheme—not to characterize it as breach-of-faith job—is put out and supported because the St. Louis County Gas Company charges the residents of Kirkwood $1.20 per 1,000. The aforesaid residents (prominent in the ranks of whom figures Mr. Wyatt Shallcross) want gas at 80 cents per 1,000, which any gas man conversant with the locality and situation well knows is an impossibility, unless the supplying concern is of an entirely philantropic sort. The invitations for bids are appearing in the designated papers (it is needless to ask if the JOURNAL is one of them) and we here are awaiting with curiosity the lists of the applicants. Would it not be surprising if dear, old Bennie Van Steenbergh, the corncob process man, and the Dr. Chisholm had a try at it?"

ALD. GRAHAM, of the Toronto (Can.) City Council is agitating the matter of a permanent inspector of gas meters for that city.

THE proprietors of the North Adams (Mass.) Gas Company have applied to the Board of Gas and Electric Light Commissioners for the right to issue bonds in the sum of $100,000.

THE American Construction Company, of Newton, Iowa, has commenced construction work on the new plant for Yankton, South Dakota.

AT the annual meeting of the Southern Dutchess Gas and Electric Company, of Fishkill, N. Y., the following officers were elected: Directors, J. T. Smith, S. K. Phillips, E. L. Tompkins, W. J. Conklin and C. H. Watson; President and Treasurer, John T. Smith; Vice-President, C. H. Watson; Secretary, S. K. Phillips.

THE AMERICAN GAS LIGHT JOURNAL

A. M. CALLENDER & CO.,
PROPRIETORS.

THOS. J. CUNNINGHAM,
ELBERT P. CALLENDER,
EDITORS.

MONDAY, JULY 27, 1908.

The Market for Gas Securities.

Consolidated stockholders are again coming into their own. The high quotation for the week was made yesterday, well above 141. At this figure very much of the short interest was driven to cover. But a fairly firm market did not break it much, the quotations at noon to-day (Friday) being 139¼–139¾.

Brooklyn Union is 132 to 135, and Peoples, of Chicago, is 96⅛ to 96⅝. Keep your eyes on Peoples. The regular dividend of 1½ per cent. on it is payable the 25th prox.

Gas Stocks.

Quotations by George W. Cless, Broker and Dealer in Gas Stocks.
16 WALL STREET, NEW YORK CITY.

JULY 27.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated Gas Co.	$73,177,000	100	139¼	139¾
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	93	93½
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	150	160
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	92	96
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98	104
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	100	105
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	90	98
Standard	5,000,000	100	70	100
Preferred	5,000,000	100	100	125
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	132	135
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	999,950	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	1	1 1-16
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
" " Bonds, 5's	5,250,000	1,000	63	66
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,000,000	1,000	104	105¼
Cincinnati Gas and Electric Co.	29,500,000	100	89	89½
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	92	96
Columbus (O.) Gas Lt. & Heating Co.	1,662,750	100	87	88
Preferred	3,028,500	100	71	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,400,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	980,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	—	—	74½	75
Detroit City Gas Co.	6,000,000	50	—	50
" Prior Lien 5's	4,618,000	1,000	—	98
Detroit Gas Co., 5's	881,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	100	105
" Bonds, 5's	10,500,000	—	101	102½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis	10,000,000	100	—	100
Preferred	2,500,000	100	80	90
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,870,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	108½
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	53¼	53½
Preferred	25,000,000	100	87	87½
Montreal Gas Co., Canada	2,000,000	100	218	218½
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	96¼	96⅝
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104½	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 5's	751,000	1,000	92	—
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¼	—
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	102	—
Washington (D. C.) Gas Co.	2,600,000	20	325	335
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	220	—

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PROPOSALS FOR STREET LIGHTING.

Bids for Street Lighting in the Township of Cranford, Union County, N. J., will be received by the Township Committee, on Wednesday, August 5, 1908, at the Township Rooms, Cranford, N. J., at 8 o'clock P.M. The present lighting consists of 211 incandescent lights, 25-candle power, and 11 arc lights, 1,200-candle power. Bids should be for this amount of lighting, with provision for increase as may from time to time be ordered.

The Township Committee reserve the right to reject any or all bids or proposals. Full information may be had by applying to the undersigned.

By order of the Township Committee.

1728-2 JAMES E. WARNER, Township Clerk.

PRACTICAL GAS SUPERINTENDENT

Desires Permanent Position with Medium or Small Gas Company as Manager or Superintendent.

Qualified to take entire charge of both coal and water gas properties. Clean record. Twenty-five years' experience.

1726-4 Address, "D. H. H.," care this Journal.

Position Wanted

As Manager or Superintendent,

By competent gas man, 35 years of age, married, strictly sober, with operating experience both as manager and superintendent in actual charge of plants. A man who can show and give results; 17 years' experience; now acting as manager of coal gas plant in city of 15,000. Will have to give present people 60 days' notice. Address,

1727-eot-tf "RESULTS," care this Journal.

POSITION WANTED.

GASFITTER and COMPLAINT MAN.

Nine years' experience. Employed at present. Address, "A. C.,"

1729-1 Care this Journal.

Position Wanted.

A capable and successful gas engineer, with 10 years' experience in all branches of the gas business, desires a position as manager of a small gas company. Now employed by a large company. Best of references. Address, "C.,"

1728-2 Care this Journal.

Position Wanted

As Manager or Superintendent of Gas Company.

Have had 10 years' experience in both the construction and operation of coal and water gas plants. Can give best of references and will guarantee results.

1728-2 Address, "K. C. B.," care this Journal.

Situation Wanted

As Manager or Superintendent of Water Gas Plant.

Married man desires position as manager or superintendent of water gas plant; 10 years' experience. Also had practical office experience. Best of references furnished.

1729-1 Address, "M. C. W.," care this Journal.

WANTED,

A traveling man to handle as a side line a commodity which is used by every gas company, on a commission basis. In answering, please state territory covered and how long you have been acquainted with the gas trade.

1728-2 Address, "W. O.," care this Journal.

WANTED,

Experienced, energetic man, to act as outside foreman and complaint man for a gas company sending out about 40,000,000 cubic feet per year. Must be a hustler and well versed in all branches of distribution, and not afraid of work. Good salary and permanent position for the right party. Must come well recommended Address, stating experience, age, and salary expected, "F. G. C.,"

1728-2 Care this Journal.

WANTED,

A Live Man for New Business Department.

A permanent position will be given party who has had experience and can get the business. Applicants will please give their age, whether married or single, experience, recommendations, and salary expected.

1729-2 Address, "A. G. C.," care this Journal.

WANTED,

By large syndicate owning various properties, a strong solicitor, capable of organizing and conducting successful campaign for new gas and electric business. Location, Texas.

1729-2 Address, "T. L.," care this Journal.

FOR SALE, CHEAP,

Twenty-eight 4-Burner Gas Arc Lamps.

They are of the Lovett type, complete, with glassware, and are in good condition. Apply to

POTOMAC ELECTRIC POWER CO.,

1725-3 WASHINGTON, D. C.

FOR SALE,

One 48-Inch Station Meter, Complete.

It has not been connected since rebuilt about a year ago by Helme & McIlhenny, Philadelphia, Pa. We refer you to them as to its condition.

STANDARD GAS AND ELECTRIC CO.,

1729-tf RALEIGH, N. C.

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 100 in use. Write to

STROH & OSIUS, Patentees, or

MICHIGAN AMMONIA WORKS, Detroit, Mich.

HOW'S YOUR METER'S LUNGS?

INLET AT TOP.

Diaphragms are to meters what lungs are to men. Condensation is to a diaphragm what Tuberculosis is to the lungs. The worse the disease the sooner the finish. The functions of both are destroyed eventually. One may never be replaced, the other, the diaphragm, may be, but at considerable cost. The way to avoid this is to use a

"SELF-DRAINING METER,"

Guaranteed free of Repairs for two years. Condensation never reaches diaphragm, insuring longer life.

ALWAYS ACCURATE.

Low speed. Extra Heavy Tin Used. Thoroughly Seasoned Diaphragm.

SAVES OVER 75 PER CENT. IN ANNUAL COST REPAIRS.

LARGEST CAPACITY of any METER MADE.

Write me for price, particulars, or to call.

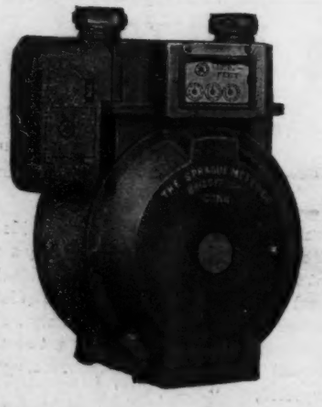
E. W. BROWN, Sole Agent,

229 to 269 Chestnut Street, Brooklyn, N. Y.

INLET AT BOTTOM.

PATENTED MAY 13, 1902.

PATENTED MAY 13, 1902.



The Sprague Meter Co.

Manufacturers of

Cast Iron Gas Meters

for

Artificial or Natural Gas

Plain or Prepayment

Lower in first cost and cheaper to maintain than any meter on the market.

Write us for particulars.

The Sprague Meter Company

203 Water St., Bridgeport, Conn.

CONNERSVILLE GAS EXHAUSTERS

AND HIGH PRESSURE GAS PUMPS.

THIS cut shows one of our High Pressure machines and a 4-valve engine connected by one of our leather link flexible couplings. Two of these units were installed for the Peoples Gas Light and Coke Co., Chicago, at their 73d St. Station. Each machine has a capacity of 14,000,000 cubic feet per day.

—o—

We also manufacture

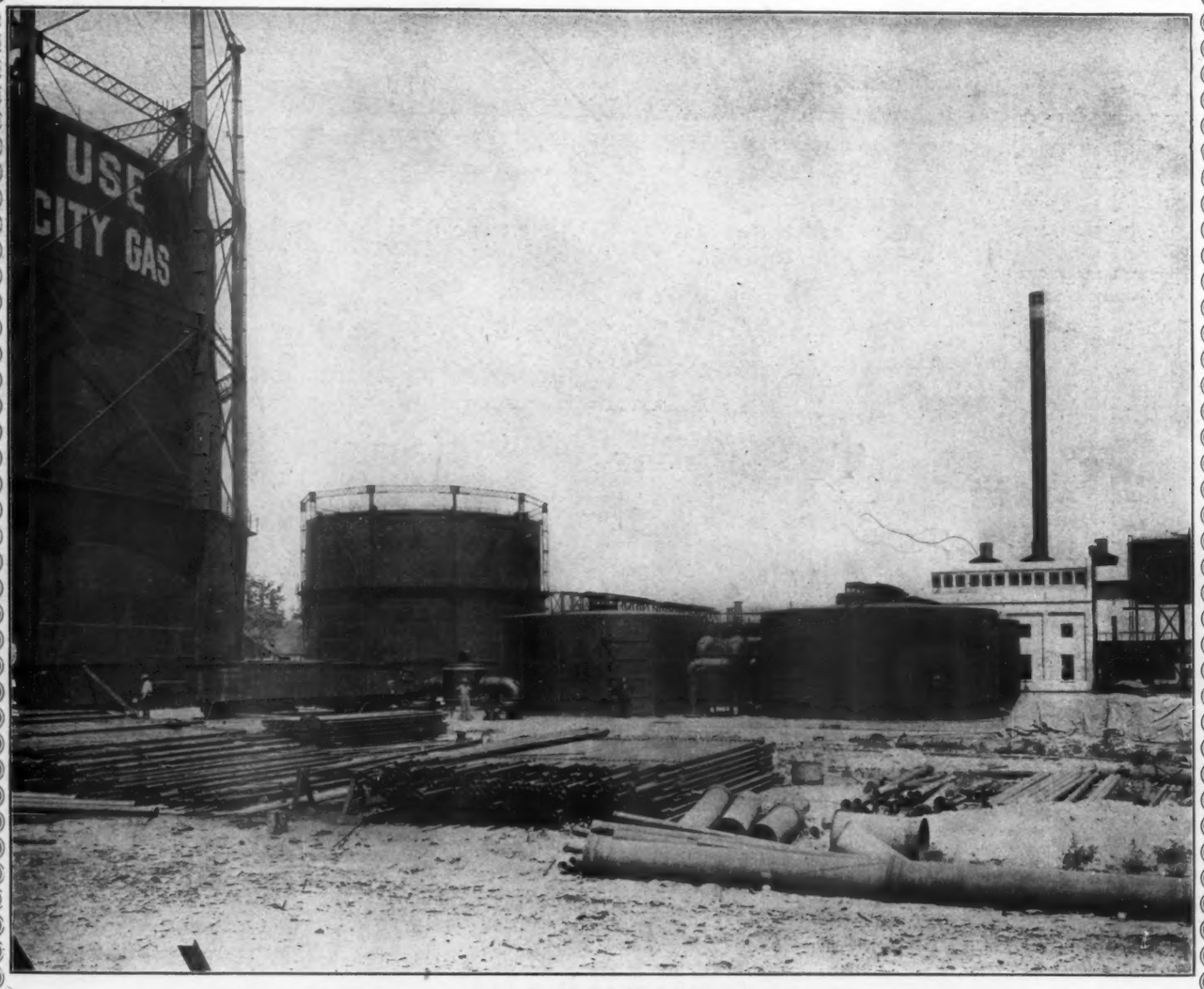
GAS VALVES,
BY-PASS VALVES,
PRESSURE REGULATORS,
ETC., ETC.

Correspondence Solicited.

THE CONNERSVILLE BLOWER COMPANY,

Connersville, Indiana, U. S. A.

NEW YORK OFFICE, 50 Church Street. - - HORACE G. COOKE, Selling Agent.



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Each Having a Capacity of **3,840,000 Cubic Feet per Day.**

These Machines will be Installed at Joliet, Illinois, to Measure Product of Coke Ovens Now Under Construction by that Company.

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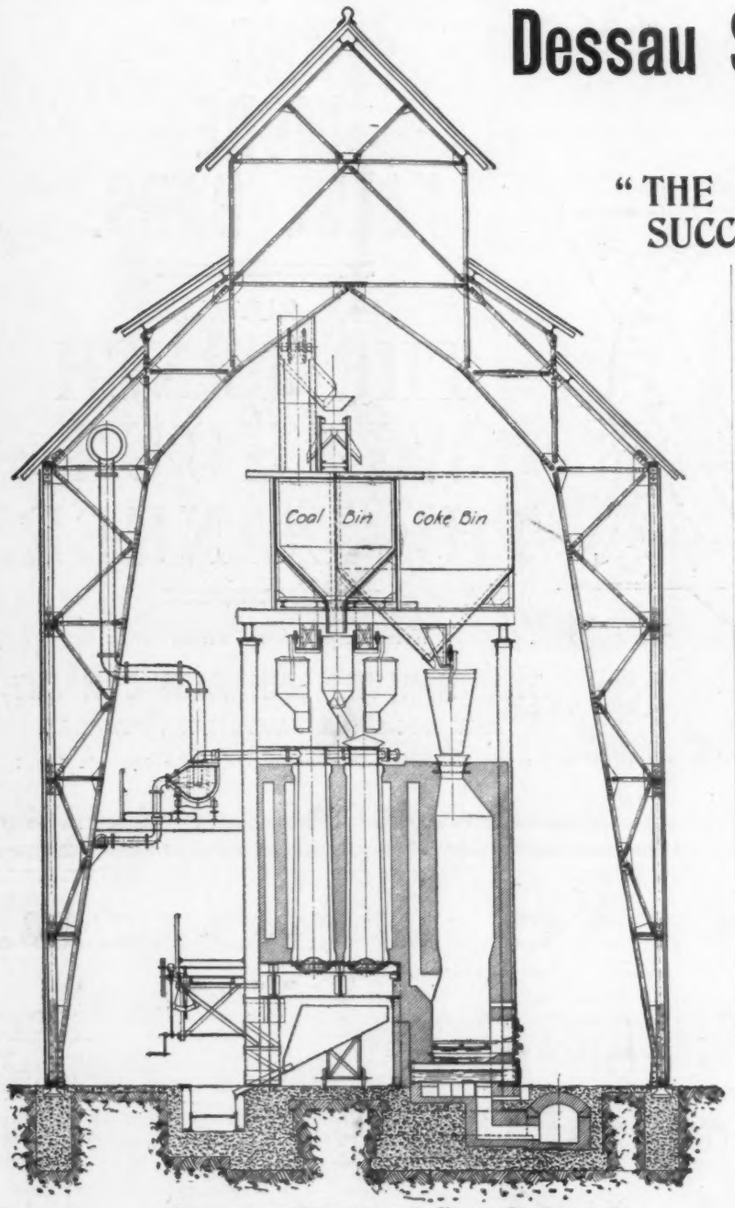

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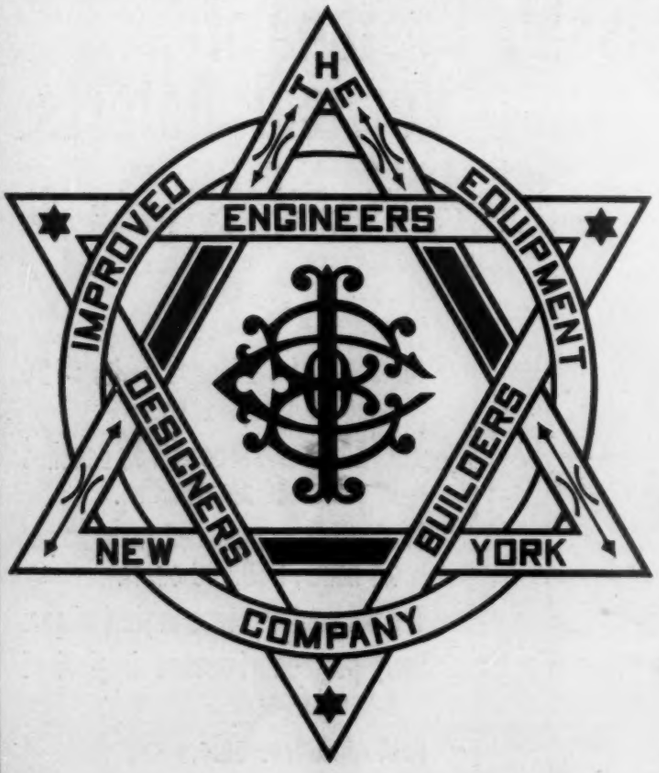

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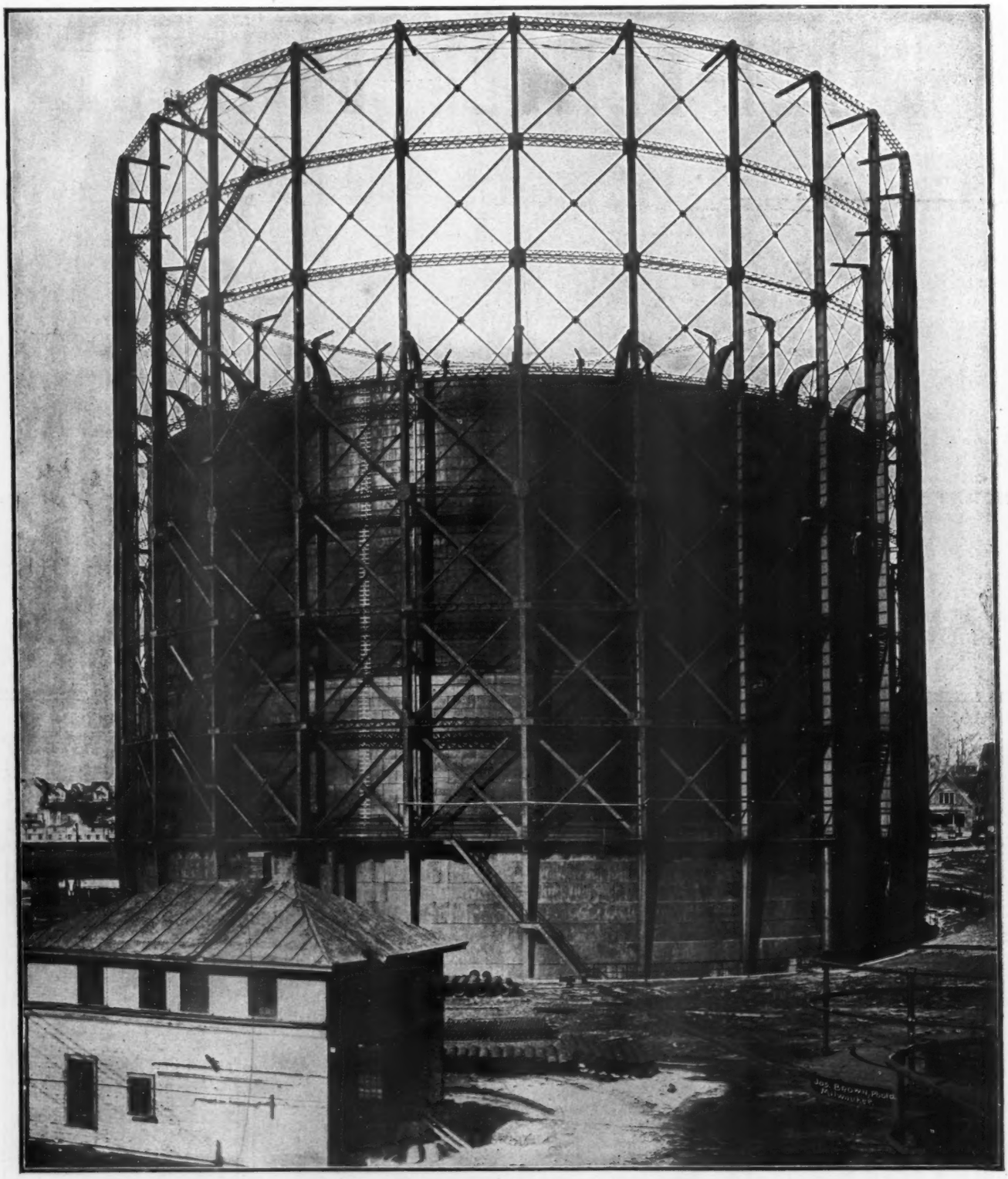

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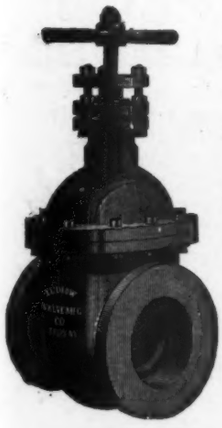

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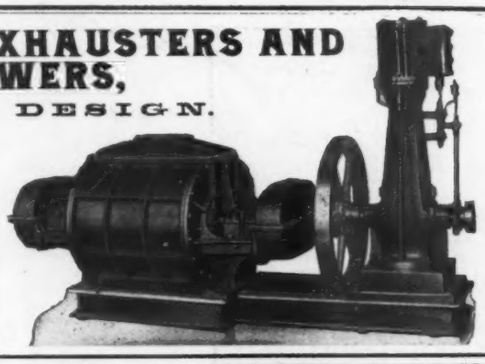

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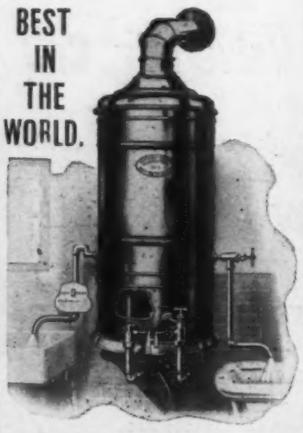

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Special Merits.

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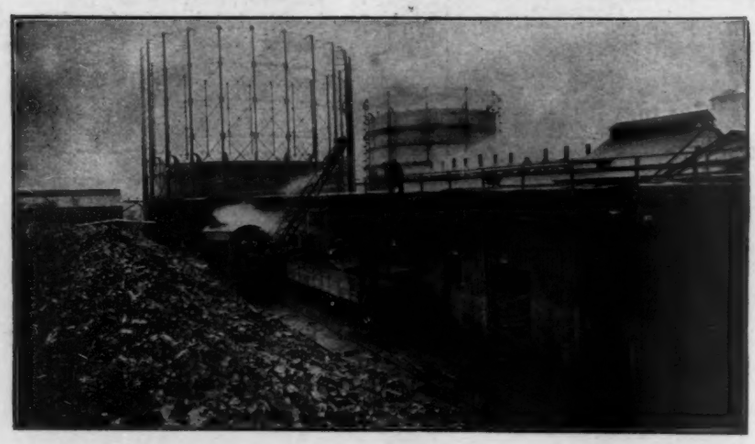

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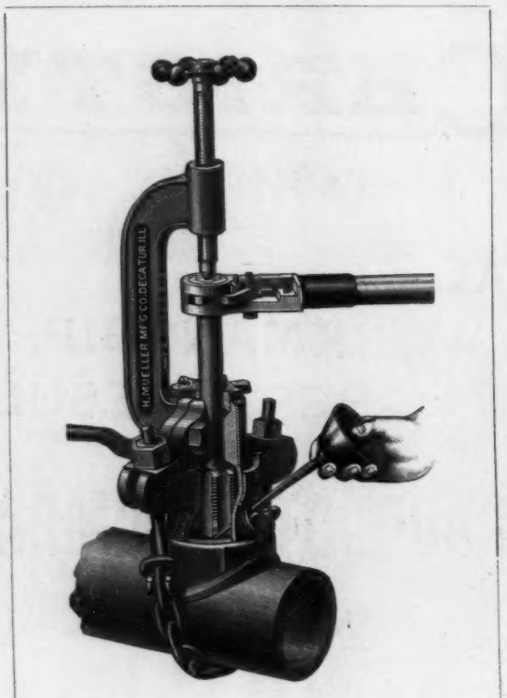

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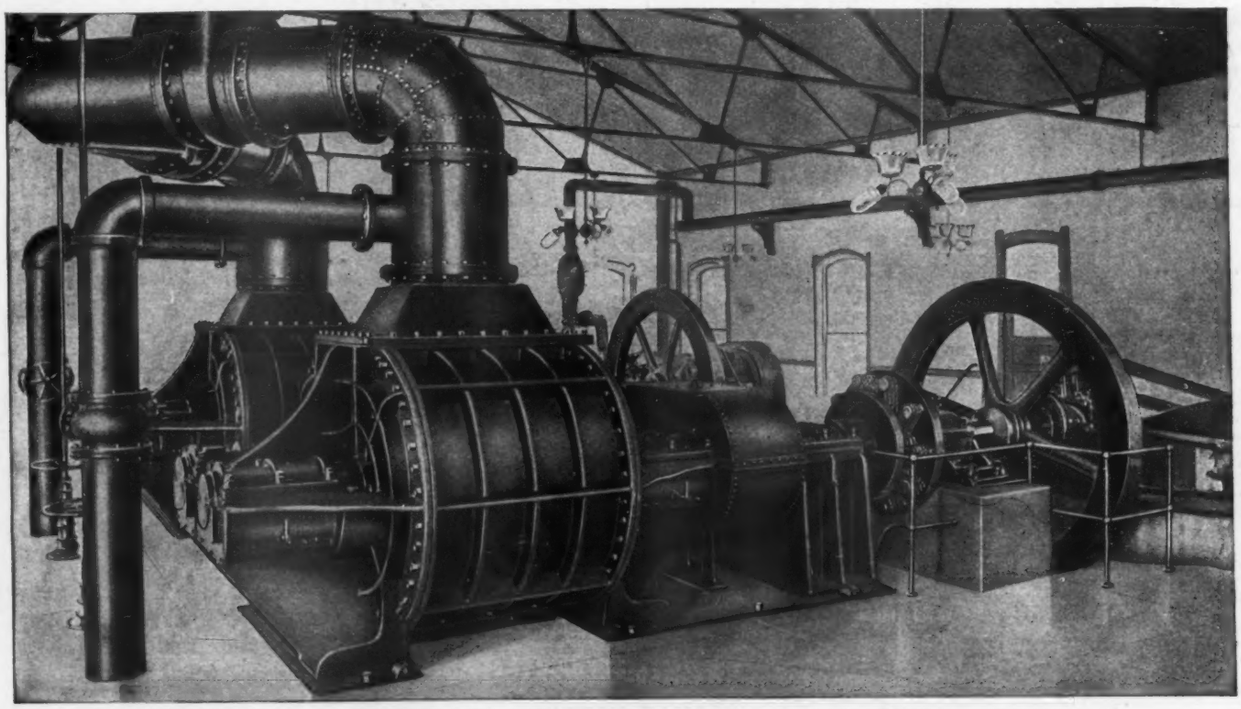

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PUBLIC LIGHTING TABLE.

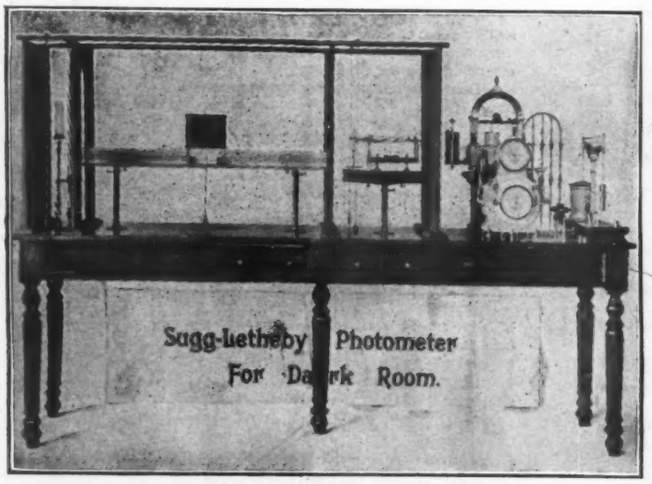
AUGUST, 1908.

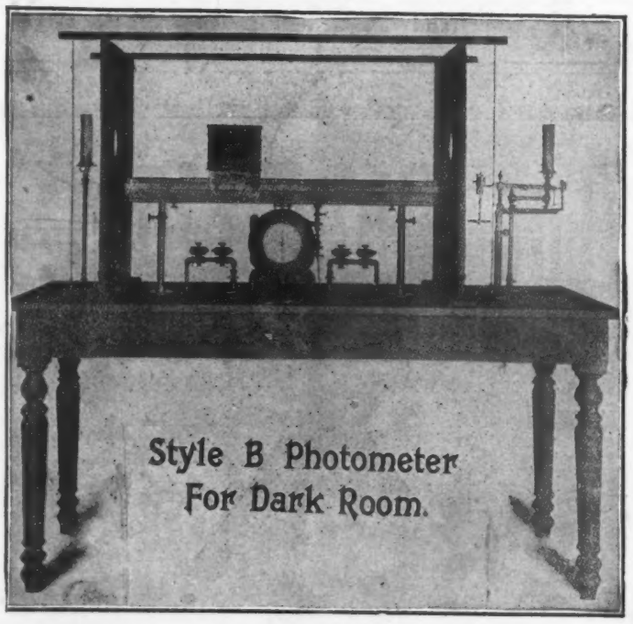
Day of Week.	Date.	Table No. 1. Following the Moon. Light.	Extinguish.
Sat.	1	8.50 PM	4.00 AM
Sun.	2	9.10	4.00
Mon.	3	9.40	4.00
Tue.	4	10.00 FQ	4.00
Wed.	5	10.40	4.00
Thu.	6	11.10	4.00
Fri.	7	11 50	4.00
Sat.	8	12.50 AM	4.00
Sun.	9	1.50	4.10
Mon.	10	No L.	No L.
Tue.	11	No L FM	No L.
Wed.	12	No L.	No L.
Thu.	13	7.30 PM	9.20 PM
Fri.	14	7.30	10.00
Sat.	15	7.30	10.30
Sun.	16	7.20	11.00
Mon.	17	7.20	11.30
Tue.	18	7.20 LQ	12.00
Wed.	19	7.20	12.40 AM
Thu.	20	7.20	1.20
Fri.	21	7.20	2.10
Sat.	22	7.20	3.00
Sun.	23	7.10	4.20
Mon.	24	7.10	4.20
Tue.	25	7.10	4.20
Wed.	26	7.10 NM	4.20
Thu.	27	7.10	4.20
Fri.	28	7.10	4.20
Sat.	29	7.10	4.20
Sun.	30	7.10	4.30
Mon.	31	8.10	4.30

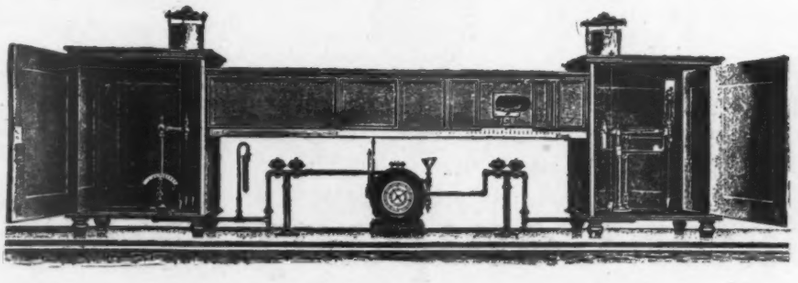
TOTAL HOURS DURING 1908.

By Table No. 1.

	Hrs. Min.
January	228.30
February	187.30
March	192.00
April	160.10
May	155.10
June	138.00
July	155.50
August	173.40
September	185.20
October	214.00
November	218.10
December	226.40
Total, yr.	2235.00







Closed Photometer For Light Room.

CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

AUGUST, 1908.

Day of Week.	Date.	Table No. 2. New York City. All Night Lighting. Complete Lighting in One Hour From Time Given P. M.	Complete Extinguishing in 50 Minutes From Time Given A.M.
Sat.	1	7.02	3.27
Sun.	2	7.02	3.27
Mon.	3	7.02	3.27
Tue.	4	7.02	3.27
Wed.	5	7 02	3.27
Thu.	6	6.57	3.37
Fri.	7	6.57	3.37
Sat.	8	6.57	3.37
Sun.	9	6.57	3.37
Mon.	10	6.57	3.37
Tue.	11	6.57	3.37
Wed.	12	6.57	3.37
Thu.	13	6.47	3.47
Fri.	14	6.47	3.47
Sat.	15	6.47	3.47
Sun.	16	6.47	3.47
Mon.	17	6.47	3.47
Tue.	18	6.47	3.47
Wed.	19	6.47	3.47
Thu.	20	6 37	3.52
Fri.	21	6 37	3.52
Sat.	22	6 37	3.52
Sun.	23	6 37	3.52
Mon.	24	6.37	3.52
Tue.	25	6.37	3.52
Wed.	26	6.37	3 52
Thu.	27	6.27	3.57
Fri.	28	6.27	3.57
Sat.	29	6.27	3.57
Sun.	30	6.27	3.57
Mon.	31	6.27	3.57

TOTAL HOURS DURING 1908.

	Hrs. Min.
January	481.50
February	329.15
March	351.50
April	341.50
May	233.05
June	218.10
July	282.55
August	254.55
September	292.25
October	420.45
November	374.30
December	411.05
	3992.35
Deduct on account of 50 min. extinguishing time	30.30
Total, yr.	3962.05

NEW YORK, 318 West 42d Street. BOSTON, 820 Beacon Building. PHILADELPHIA, Broad and Arch Streets. ST. LOUIS, 712 Roe Building. CHICAGO, 218 La Salle Street. SAN FRANCISCO, 512 Oak Street.

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By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

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Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

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THE CHIC LIGHT

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Package Contains 16 Dozen.

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Everett, Mass.
Jenkintown, Pa. (2d contract).
Coney Island, N. Y.
Mexico, Mo.
Jacksonville, Fla.
Syracuse, N. Y. (2d contract).
Atlanta, Ga. (2d contract).
Holyoke, Mass.
Peoria, Ills.
Schenectady, N. Y. (2d contract).
Danbury, Conn.
Galveston, Tex. (2d contract).
Quebec, Canada.
Indianapolis, Ind. (2d contract).
Bessemer, Ala.
Waterbury, Conn. (5th contract).
Sioux Falls, S. D. (3d contract).
Philadelphia, Pa.
New Hartford, Conn.
Poughkeepsie, N.Y. (2d contract).
Nashville, Tenn.
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Norfolk, Va. (4th contract).
Wallingford, Conn.
Richmond, Va. (2d contract).
Oak Bluffs, Mass.
Arlington, Mass.

TOTAL SETS INSTALLED DURING YEAR, ... 43
TOTAL SETS INSTALLED TO DECEMBER 31, 1907, ... 677
TOTAL DAILY CAPACITY, TO DECEMBER 31, 1907, ... 545,865,000 cu. ft.

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Gas Analysis Apparatus.
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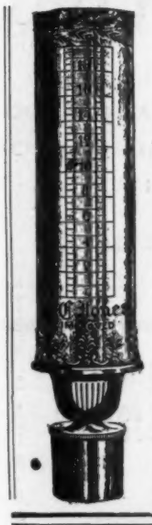

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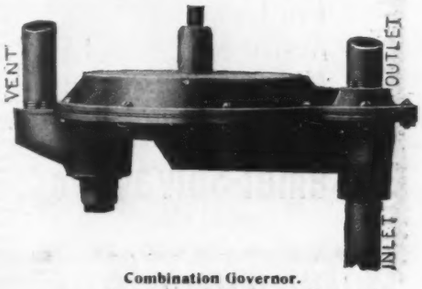

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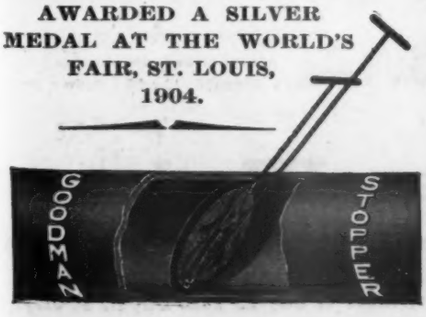

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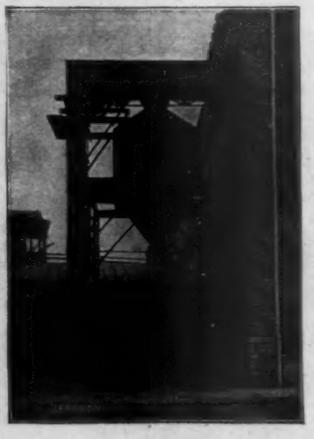

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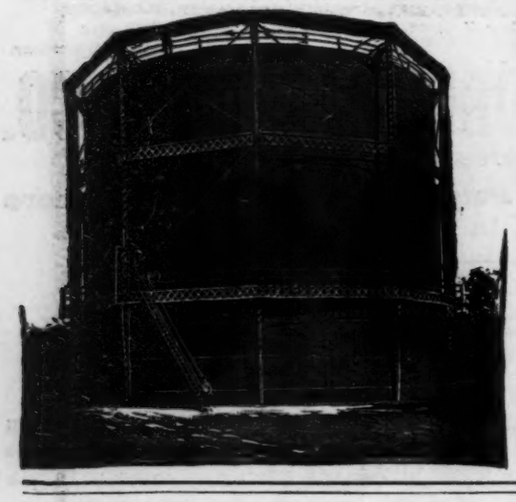

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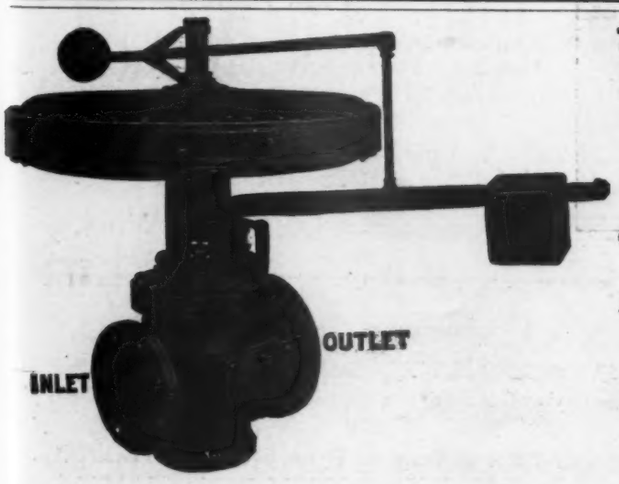

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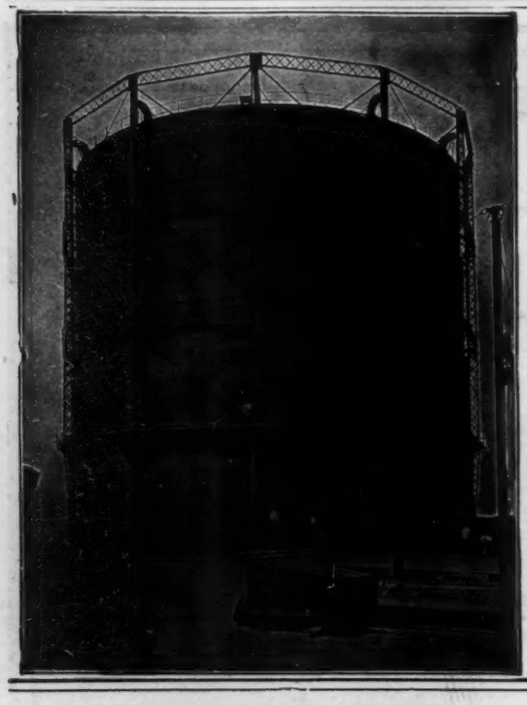

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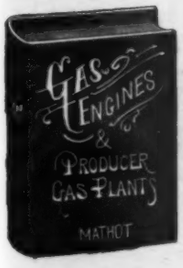

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